

Designation of Critical Habitat for West Coast Salmon and Steelhead:

4(b)(2) Report

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Appendix A. For each ESU this appendix contains:

- (1) a table summarizing the conservation value ratings, economic impacts, and proposed exclusions for occupied watersheds;
- (2) a figure illustrating the occupied watersheds within an ESU containing stream reaches eligible for critical habitat designation; and
- (3) a figure depicting the results of the section 4(b)(2) analyses by illustrating those habitat areas being recommended for exclusion from critical habitat designation.

INTRODUCTION

Background

This report contains NOAA Fisheries, Northwest Region's recommendations for designating critical habitat under section 4 of the Endangered Species Act (ESA) for 12 salmon and steelhead species that are listed under the ESA and one proposed for listing.¹ It describes the methods used, process followed, and conclusions reached for each step leading to the recommendation.

Over the past several years, NOAA Fisheries has listed 26 distinct population segments, or evolutionarily significant units (ESU), of Pacific salmon and steelhead in Oregon, Washington, Idaho and California. Collectively, these ESUs occupy thousands of miles of streams in watersheds covering more than 250 thousand square miles. In 2000, NOAA Fisheries designated critical habitat for 19 of the listed ESUs (65 FR 7764, February 16, 2000). These designations were challenged in court on a number of grounds. NOAA Fisheries entered into a consent decree resolving these claims and pursuant to court order the designations were vacated. Following remand, NOAA Fisheries received 60-day notice of intent to sue letters from environmental groups, for not having designations in place for these 19 ESUs and one additional ESU, Northern California Steelhead. The agency entered into a consent decree with the environmental groups establishing a schedule for completing new designations. This report addresses the proposed designations for 13 of those ESUs.

Statutory and Regulatory Requirements

The recommendations contained in this report were formulated consistent with statutory requirements and agency regulations. This section reviews the relevant statutory and regulatory provisions that guided the Region's development of recommendations.

Congressional findings and purposes of the Act emphasize habitat conservation

In section 1 of the ESA, "Findings," (16 U.S.C. 1531(a)(1)) Congress declared that:

¹ The 12 salmon and steelhead species include the following evolutionarily significant units (ESU) of Pacific salmon and steelhead: Puget Sound chinook salmon; Lower Columbia River chinook salmon; Upper Willamette River chinook salmon; Upper Columbia River spring-run chinook salmon; Hood Canal summer-run chum salmon; Columbia River chum salmon; Ozette Lake sockeye salmon; Upper Columbia River steelhead; Snake River Basin steelhead; Lower Columbia River steelhead; Upper Willamette River steelhead; and Middle Columbia River steelhead. The ESU proposed for listing is Oregon Coast Coho 69 Fed. Reg. 33102 (June 14, 2004).

Various species of fish, wildlife and plants in the United States have been rendered extinct as a consequence of economic growth and development untempered by adequate concern and conservation.

Section 2 of the ESA sets forth the purposes of the Act, beginning with habitat protection:

The purposes of this chapter are to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species, and to take such steps as may be appropriate to achieve the purposes of the treaties and conventions set forth in subsection (a) of this section.

“Critical Habitat” is specifically defined

Section 3(5)(A) of the ESA (16 U.S.C. 1532 (5)) defines critical habitat in some detail.

(5)(A) The term “critical habitat” for a threatened or endangered species means –

(i) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 1533 of this title, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and

(ii) specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of section 1533 of this title, upon a determination by the Secretary that such areas are essential for the conservation of the species.

(B) Critical habitat may be established for those species now listed as threatened or endangered species for which no critical habitat has heretofore been established as set forth in subparagraph (A) of this paragraph.

(C) Except in those circumstances determined by the Secretary, critical habitat shall not include the entire geographical area which can be occupied by the threatened or endangered species.

“Conservation” is specifically defined

Section 3(3) of the Act also defines conservation (16 U.S.C. 1532(3)):

(3) The terms "conserve", "conserving", and "conservation" mean to use and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this chapter are no longer necessary.

Certain military lands are precluded from designation

In 2003 Congress amended section 4(b)(1) of the ESA to limit the designation of land controlled by the Department of Defense (National Defense Authorization Act, P.L. No. 108-136):

The Secretary shall not designate as critical habitat any lands or other geographical areas owned or controlled by the Department of Defense, or designated for its use, that are subject to an integrated natural resources management plan prepared under section 101 of the Sikes Act (16 U.S.C. 670a), if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation.

Specific deadlines limit the time and information available for making designations

Section 4(a)(3) requires NOAA Fisheries to make critical habitat designations concurrently with the listing determination, to the maximum extent prudent and determinable:

(3) The Secretary, by regulation promulgated in accordance with subsection (b) of this section and to the maximum extent prudent and determinable -

(A) shall, concurrently with making a determination under paragraph (1) that a species is an endangered species or a threatened species, designate any habitat of such species which is then considered to be critical habitat

The time for designating critical habitat may be extended pursuant to section 4(b)(6)(C), but not by more than 12 months:

(C) A final regulation designating critical habitat of an endangered species or a threatened species shall be published concurrently with the final regulation implementing the determination that such species is endangered or threatened, unless the Secretary deems that -

(i) it is essential to the conservation of such species that the regulation implementing such determination be promptly published; or

(ii) critical habitat of such species is not then determinable, in which case the Secretary, with respect to the proposed regulation to designate such habitat, may extend the one-year period specified in subparagraph (A) by not more than one additional year, but not later than the close of such additional year the Secretary must publish a final regulation, based on such data as may be available at that time, designating, to the maximum extent prudent, such habitat.

Impacts of designation must be considered and areas may be excluded

Specific areas that fall within the definition of critical habitat are not automatically designated as critical habitat. Section 4(b)(2) (16 U.S.C. 1533(b)(1)(A)) requires the Secretary to first consider the impact of designation and permits the Secretary to exclude

areas from designation under certain circumstance. Exclusion is not required for any areas.

The Secretary shall designate critical habitat, and make revisions thereto, under subsection (a)(3) of this section on the basis of the best scientific data available and after taking into consideration the economic impact, the impact on national security and any other relevant impact, of specifying any particular area as critical habitat. The Secretary may exclude any area from critical habitat if he determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless he determines, based on the best scientific and commercial data available, that the failure to designate such area as critical habitat will result in the extinction of the species concerned.

Federal agencies must ensure their actions are not likely to destroy or adversely modify critical habitat

Once critical habitat is designated, section 7(a)(2) provides that federal agencies must ensure any actions they authorize, fund or carry out are not likely to result in the destruction or adverse modification of critical habitat (16 U.S.C. 1536(a)(2)). Section 7 also requires federal agencies to ensure such actions do not jeopardize the continued existence of the listed species:

Each Federal agency shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded, or carried out by such agency (hereinafter in this section referred to as an "agency action") is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary, after consultation as appropriate with affected States, to be critical, unless such agency has been granted an exemption for such action by the Committee pursuant to subsection (h) of this section. In fulfilling the requirements of this paragraph each agency shall use the best scientific and commercial data available.

Authority to designate critical habitat is delegated to NOAA Fisheries

The authority to designate critical habitat, including the authority to consider the impacts of designation, the authority to weigh those impacts against the benefit of designation, and the authority to exclude particular areas, has been delegated to the Assistant Administrator of the National Marine Fisheries Service. Department Organization Order 10-15 (5/24/04). NOAA Organization Handbook, Transmittal #34 (May 31, 1993).

Joint regulations govern designation

Aside from restating the statutory definitions and criteria, joint regulations of the Services elaborate on those physical and biological features essential to conservation, and set standards for the delineation of critical habitat.

50 CFR Sec. 424.12 Criteria for designating critical habitat.

(b) In determining what areas are critical habitat, the Secretary shall consider those physical and biological features that are essential to the conservation of a given species and that may require special management considerations or protection. Such requirements include, but are not limited to the following:

- (1) Space for individual and population growth, and for normal behavior;
- (2) Food, water, air, light, minerals, or other nutritional or physiological requirements;
- (3) Cover or shelter;
- (4) Sites for breeding, reproduction, rearing of offspring, germination, or seed dispersal; and generally;
- (5) Habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species.

When considering the designation of critical habitat, the Secretary shall focus on the principal biological or physical constituent elements within the defined area that are essential to the conservation of the species. Known primary constituent elements shall be listed with the critical habitat description. Primary constituent elements may include, but are not limited to, the following: roost sites, nesting grounds, spawning sites, feeding sites, seasonal wetland or dryland, water quality or quantity, host species or plant pollinator, geological formation, vegetation type, tide, and specific soil types.

(c) Each critical habitat will be defined by specific limits using reference points and lines as found on standard topographic maps of the area. Each area will be referenced to the State(s), county(ies), or other local governmental units within which all or part of the critical habitat is located. Unless otherwise indicated within the critical habitat descriptions, the names of the State(s) and county(ies) are provided for information only and do not constitute the boundaries of the area. Ephemeral reference points (e.g., trees, sand bars) shall not be used in defining critical habitat.

(d) When several habitats, each satisfying the requirements for designation as critical habitat, are located in proximity to one another, an inclusive area may be designated as critical habitat.

Definitions in the regulations elaborate on the meaning of “special management considerations or protection.”

(j) Special management considerations or protection means any methods or procedures useful in protecting physical and biological features of the environment for the conservation of listed species.

Sec. 424.02

APPROACH TO DESIGNATING CRITICAL HABITAT

Statutory Context

One observer has noted that at different times in the history of the ESA, Congress has emphasized both the importance of habitat protection to species conservation and the importance of agency restraint in designating areas as “critical” habitat (Patlis 2001). Congress emphasized the importance of habitat in species conservation in several provisions of the ESA. The findings recognize that extinctions have resulted from economic growth and development. Among the purposes of the Act is providing “a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved.” In determining whether a species is a threatened or endangered species, the Secretary is to consider the current or threatened destruction of its habitat. Federal agencies are prohibited from destroying or adversely modifying critical habitat. Section 5 of the Act authorizes the Secretary of Interior to acquire land for species conservation and section 10 requires the development of “habitat conservation plans” for the issuance of incidental take permits.

At the same time, the ESA requires a degree of rigor in identifying areas that qualify as critical habitat. The definition of critical habitat specifies separate criteria for designating occupied areas and unoccupied areas. Occupied areas are critical habitat if they contain physical or biological features essential to the species’ conservation, and those features may require special management considerations or protection. Unoccupied areas may be designated only upon a determination that the area itself is essential to conservation. (The House Merchant Marine Committee expressed its view “that the Secretary should be exceedingly circumspect in the designation of critical habitat outside of the presently occupied area of the species” (H.R. Rep. 95-1625).) Finally, the Services are not to designate all of the geographical area that can be occupied by the species, absent a determination that the entire area is essential to conservation.

In addition to the tension between an emphasis on the importance of habitat and a rigorous definition of critical habitat, the ESA’s provisions for designating critical habitat stand out from the listing provisions of the Act in requiring the Services to consider factors in addition to species conservation. Before they may designate an area as critical habitat, the Services must consider the economic impact, impact on national security, and any other relevant impact of the designation. The Services have the discretion to exclude an area from designation if they determine the benefits of exclusion (that is, avoiding the impact that would result from designation), outweigh the benefits of designation (that is, the benefits to species conservation). The Services’ discretion is limited in that they may not exclude an area from designation if exclusion will result in extinction of the species.

The Services must observe the details of the statutory definition of critical habitat; must use the best available science; must consider the impacts of the designation on economic, national security, and other relevant interests; and may weigh the benefit to species conservation resulting from designation against the benefits of exclusion. All of this

must be done within specific statutory timeframes, based upon the best information available during those timeframes, and with public notice and participation. In designating critical habitat for Pacific salmon and steelhead, we sought an approach that adhered to these statutory requirements and ultimately exercised the agency's discretionary authority within the framework of agency and administration policy.

Steps in the Approach to Designating Critical Habitat

The approach we adopted in applying sections 3(5)(A) and 4(b)(2) involved these steps:

- 1) Identify specific areas meeting the definition of critical habitat
- 2) Conduct a Section 4(b)(2) analysis
 - A) Determine the benefit of designating each area as critical habitat;
 - B) determine the impact of designating each area as critical habitat;
 - C) determine whether benefits of exclusion outweigh benefits of designation;
 - D) determine whether the cumulative effect of the recommended exclusions will result in extinction of the species.

1) Identify Specific Areas Meeting the Definition of Critical Habitat

In General

Areas that meet the definition of critical habitat include specific areas: 1) within the geographical area occupied by the species that contain physical or biological features essential for conservation, which may require special management considerations or protection, and 2) outside the geographical area occupied by the species if the area itself is essential to conservation. In a separate draft report, NOAA Fisheries has documented its conclusions regarding which specific areas meet the definition of critical habitat and are therefore eligible for designation (NMFS 2004a). Pursuant to section 3(5)(A), the first task was to determine "the geographical area occupied by the species at the time of listing." We developed extensive information regarding the stream reaches occupied by salmon and steelhead using data compiled by the fish and wildlife agencies of Oregon, Washington and Idaho, as the best available data. We collected and verified these data and produced distribution maps at a scale of 1:24,000, using standard Geographic Information System (GIS) software. We also developed latitude-longitude identifiers for the end-points of each occupied stream reach. We submitted these maps to the state agencies and Indian tribes for verification.

Relying on the biology and life history of each species, we determined the physical or biological habitat features essential to their conservation. We identified these features in an Advance Notice of Proposed Rulemaking (ANPR) (68 FR 55926, Sept. 29, 2003) and asked for public comment. We did not receive comments specifically addressing the

physical and biological features. During our deliberations since publication of the ANPR, we have consulted with teams of federal biologists (described below) and will propose the physical and biological features essential to conservation that are modified slightly from those in the ANPR.

Again relying on the biology and population structure of the species, and the characteristics of the habitat it occupies, we identified “specific areas” in which these physical or biological features could be found. To delineate specific areas, we used standard watershed units, as mapped by the U.S. Geological Service, designated by fifth field hydrologic unit codes, or HUC5s (this report refers to these HUC5s as “watersheds”). The USGS maps watersheds as polygons, bounding a drainage area from ridge-top to ridge-top, encompassing streams, riparian areas and uplands. Within the boundaries of any watershed, there are stream reaches not occupied by the species. Land areas within the watershed boundaries are also generally not “occupied” by the species (though certain areas such as flood plains or side channels may be occupied at some times of some years). We used the watershed boundaries as a basis for aggregating occupied stream reaches, for purposes of delineating “specific” areas.

We used the same watershed aggregation of stream reaches to allow us to analyze the impacts of designating a “particular area,” as required by section 4(b)(2). Section 3(5) defines critical habitat as being “specific areas” while section 4(b)(2) requires the agency to consider certain factors before designating “particular areas.” Depending on the biology of the species, the characteristics of its habitat, and the nature of the impacts of designation, “specific” areas might be different from, or the same as, “particular” areas. For this designation, we used the same delineation for both – the occupied stream reaches within a watershed – and refer to that delineation as a “habitat area.”

Teams of federal biologists then examined each habitat area within a watershed to determine whether the stream reaches occupied by the species contained the physical or biological features previously identified as essential to conservation. The teams also determined whether, consistent with the regulatory definition (50 C.F.R. 402.02 (j)), there were “any methods or procedures useful in protecting physical and biological features.” To do so the teams determined whether there were management activities in the area that represented threats to the physical or biological features. (Management activities were considered broadly as any human activities with the potential to alter the land or water.) Where management activities exist that threaten these features, and changes in such activities would be useful in protecting the identified habitat features, NOAA Fisheries concluded that the features in that area “may require special management considerations or protection.”

Aside from occupied areas containing essential features that may require special management, the definition of critical habitat includes unoccupied areas if the Services determine that the area itself is essential for conservation. We asked the teams of federal biologists whether there were any unoccupied areas within the historical range of the ESUs that may be essential to conservation. Where information was available to make this determination, the teams indicated those areas not occupied at the time of listing that

are essential for conservation. (Three unoccupied stream reaches are proposed for Hood Canal Summer Chum.) In most cases, the teams did not have information available that would allow them to draw that conclusion. The teams nevertheless identified areas they believe may be determined essential through future recovery planning efforts. The draft Federal Register Notice accompanying this report identifies these unoccupied areas and requests public comment. We also anticipate that ongoing recovery planning processes will develop better information about the species' need for habitat areas beyond those currently occupied.

Military Lands

Recent amendments to the ESA direct the Secretary not to designate military lands as critical habitat if those lands are covered by an Integrated Natural Resource Management Plan (INRMP) under the Sikes Act that the Secretary certifies in writing benefits the listed species (Section 4(a)(3) (National Defense Authorization Act is Public Law. No. 108-136)). In a letter dated February 20, 2004, we contacted the Department of Defense and requested information on all INRMPs that might benefit Pacific salmon and steelhead. The military services identified 10 military installations in the Pacific Northwest with INRMPS in place and provided copies for our review. We reviewed these plans as well as other information available to us regarding the management of these military lands. Based on this information, we determined that each INRMP provides benefits to the listed species, as implemented. This determination is detailed in a memo from the Northwest Region's Habitat Conservation Division (NMFS 2004b).

2) Conduct a Section 4(b)(2) Analysis

Analyzing Co-Extensive Impacts

As discussed in the "Background" section, NOAA Fisheries' 2000 designation of critical habitat for 19 ESUs of salmon and steelhead was vacated by a court order following a challenge to the designations (*National Association of Homebuilders v. Evans*, 2002 WL 1205743 No. 00-CV-2799 (D.D.C.)) (*NAHB*). In the 2000 designations, NOAA Fisheries concluded there would be no impact from the designations, because we were only designating occupied areas. Federal agencies must ensure their actions are not likely to result in the destruction or adverse modification of critical habitat and are not likely to jeopardize the species' continue existence. In occupied habitat, we had reasoned that any action that adversely modifies critical habitat would also jeopardize the species, thus there would be no impact of designation beyond the impact already imposed by the listing and the accompanying jeopardy requirement.

While the case against us was pending, the Court of Appeals for the Tenth Circuit vacated the U.S. Fish and Wildlife Service's critical habitat designation for the southwestern willow flycatcher (*New Mexico Cattle Growers Association v. U.S. Fish and Wildlife Service*, 248 F.3d 1277 (10th Cir. 2001)) (*NMCA*). The Service had determined there would be no economic impact from the designation because the impacts associated with jeopardy determinations and adverse modification determinations were

coextensive. The Tenth Circuit found the Service's approach rendered meaningless Congress's requirement that economic impacts be considered in the designation process. The Court concluded that, to give "effect to Congressional directive," the Service must analyze the full impacts of designation, regardless of whether those impacts are co-extensive with other impacts (such as the impact of the jeopardy requirement). Given the decision in the Tenth Circuit, and the similarity between the Fish and Wildlife Service's analysis and ours, NOAA Fisheries sought a voluntary remand of the designations, which the District Court granted.

In granting our motion for a voluntary remand for the salmon and steelhead designations, the district court in *NAHB* noted, "[f]rom this court's perspective the Tenth Circuit's opinion is well-reasoned and comports with the express statutory language of Congress, which specifically requires that an analysis of the economic impact of a critical habitat designation be undertaken." The court observed that "clearly, there is a problem with the current process underlying the critical habitat designation process." The court left it to the agency's "wisdom and institutional knowledge" to remedy the problem and noted "[p]resumably, when the agency conducts new rulemaking it will be in accord with procedures it views to be in accordance with the law."

In re-designating critical habitat for salmon and steelhead ESUs, we have followed the Tenth Circuit's instruction regarding the statutory requirement to consider the economic impact of designation. Areas designated as critical habitat are subject to ESA Section 7 which provides that federal agencies ensure their actions do not destroy or adversely modify critical habitat. To evaluate the economic impact of critical habitat we first examined our extensive consultation record with these as well as other ESUs of salmon and steelhead. (For thoroughness, we examined the consultation record for other ESUs to see if it shed light on the issues.) That record includes consultations on habitat-modifying federal actions both where critical habitat has been designated and where it has not. We could not discern a distinction in the impacts of applying the jeopardy provision versus the adverse modification provision in occupied habitat. Given our inability to detect a measurable difference between the impacts of applying these two provisions, the only reasonable alternative seemed to be to follow the recommendation of the Tenth Circuit, approved by the *NAHB* court – measure the coextensive impacts, that is, measure the entire impact of applying the adverse modification provision of section 7, regardless of whether applying the jeopardy provision would result in the identical impact.

The Tenth Circuit's opinion addressed only section 4(b)(2)'s requirement that economic impacts be considered ("The statutory language is plain in requiring some kind of consideration of economic impact in the CHD phase"). The Court did not address how "other relevant impacts" were to be considered, nor did it address the benefits of designation. Because section 4(b)(2) requires a consideration of other relevant impacts of designation, and of benefits of designation, and because our record did not support a distinction between impacts resulting from application of the adverse modification provision versus the jeopardy provision, we have concluded that we must uniformly

consider coextensive impacts and coextensive benefits. To do otherwise would distort the balancing test contemplated by section 4(b)(2), once impacts have been considered.

We recognize that, in reality, excluding an area from designation will not likely avoid all of the impacts we considered, because the section 7 requirement regarding jeopardy still applies. Similarly, much of the section 7 benefit would still apply because the jeopardy requirement still applies. Nevertheless, the analytical framework we are recommending provides a meaningful comparison of the relative benefits and impacts.

Analytical Framework for Determining and Weighing Impacts and Benefits

Section 4(b)(2) provides that the Secretary shall consider certain impacts before designating critical habitat: “the Secretary shall designate critical habitat . . . on the basis of the best scientific data available and after taking into consideration the economic impact, impact on national security, and any other relevant impact of specifying any particular area as critical habitat.” In addition, section 4(b)(2) provides that the Secretary may exclude any area from critical habitat upon a determination that “the benefits of such exclusion outweigh the benefits of specifying such area as critical habitat.”

The balancing test in section 4(b)(2) contemplates weighing benefits that are not directly comparable – the benefit to species conservation balanced against the economic benefit, benefit to national security, or other relevant benefit that results if an area is excluded from designation. Section 4(b)(2) does not specify a method for the weighing process. Agencies are frequently required to balance benefits of regulations against impacts; Executive Order 12866 established this requirement for federal agency regulation. Ideally such a balancing would involve first translating the benefits and impacts into a common metric. Executive branch guidance from the Office of Management and Budget suggests that benefits should first be monetized – converted into dollars. Benefits that cannot be monetized should be quantified (for example, numbers of fish saved.) Where benefits can neither be monetized nor quantified, agencies are to describe the expected benefits (OMB 2003).

It may be possible to monetize benefits of critical habitat designation for a threatened or endangered species in terms of willingness-to-pay (OMB 2003). However, we are not aware of any available data that would support such an analysis for salmon and steelhead. The short statutory timeframes, geographic scale of the designations under consideration, and the statute’s requirement to use best “available” information suggest such a costly and time-consuming approach is not currently available. In addition, section 4(b)(2) requires analysis of impacts other than economic impacts that are equally difficult to monetize, such as benefits to national security of excluding areas from critical habitat. In the case of salmon and steelhead designations, impacts to Northwest tribes are an “other relevant impact” that also may be difficult to monetize.

An alternative approach, approved by OMB, is to conduct a cost-effectiveness analysis. A cost-effectiveness analysis ideally first involves quantifying benefits, for example, percent reduction in extinction risk, percent increase in productivity, or increase in

numbers of fish. Given the state of the science, it would be difficult to quantify the benefits reliably. There are models for estimating numbers of salmon that might be produced from a watershed under different sets of environmental conditions (for example, Ecosystem Diagnosis and Treatment (Mobrand 1999)). While such models give quantified results, the accuracy of the quantified projections is uncertain because of the lack of data both on the relationships between environmental conditions and numbers of fish and the actual conditions of habitat in a given area. This leads to a heavy reliance on expert opinion for estimating habitat condition and the expected response of fish to changing environmental conditions in a specific location. Moreover, applying such models at the scale required for Pacific salmon would be time-consuming and costly. (Such models may, however, be useful recovery planning tools at the population scale for selecting among recovery actions.)

Although it is difficult to monetize or quantify benefits of critical habitat designation, it is possible to differentiate among habitat areas based on their relative contribution to conservation. For example, habitat areas can be rated as having a high, medium or low conservation value. Like the models discussed above, such a rating is based on best professional judgment. The simpler output (a qualitative ordinal ranking), however, may better reflect the state of the science for the geographic scale considered here than a quantified output, and can be done more easily within the statutory timeframes and with available information. The qualitative ordinal evaluations can then be combined with estimates of the economic costs of critical habitat designation in a framework that essentially adopts that of cost-effectiveness. Individual habitat areas can then be assessed using both their biological evaluation and economic cost, so that areas with high conservation value and lower economic cost have a higher priority for designation and areas with a low conservation value and higher economic cost have a higher priority for exclusion.

A cost-effectiveness approach is also consistent with Executive Order 12866, which provides:

Section 1. Statement of Regulatory Philosophy and Principles.

(a) The Regulatory Philosophy.

In deciding whether and how to regulate, agencies should assess all costs and benefits of available regulatory alternatives, including the alternative of not regulating. Costs and benefits shall be understood to include both quantifiable measures (to the fullest extent that these can be usefully estimated) and qualitative measures of costs and benefits that are difficult to quantify, but nevertheless essential to consider. Further, in choosing among alternative regulatory approaches, agencies should select those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity), unless a statute requires another regulatory approach.

(b) The Principles of Regulation.

...

(5) When an agency determines that a regulation is the best available method of achieving the regulatory objective, it shall design its regulations in the most cost-effective manner to achieve the regulatory objective. In doing so, each agency shall consider incentives for innovation, consistency, predictability, the costs of enforcement and compliance (to the government, regulated entities, and the public), flexibility, distributive impacts, and equity.

We therefore developed section 4(b)(2) recommendations for the exercise of Secretarial discretion based on the goal of achieving species conservation while efficiently reducing economic impacts and addressing inequities in the distribution of economic impacts.

A) Determine the benefit of designating each area as critical habitat

The principal benefit of designating critical habitat is that ESA section 7 requires every federal agency to ensure that any action it authorizes, funds or carries out is not likely to result in the destruction or adverse modification of critical habitat. This complements the Section 7 provision that federal agencies ensure their actions are not likely to jeopardize the continued existence of a listed species. Another possible benefit is that the designation of critical habitat can serve to educate the public regarding the potential conservation value of an area. This may focus and contribute to conservation efforts by clearly delineating areas of high conservation value for certain species.

After establishing those areas that meet the definition of critical habitat, NOAA Fisheries asked the teams of federal biologists to determine the relative conservation value of each area for each species (high, medium or low). This evaluation provided information necessary to determine the benefit of designating any particular habitat area as critical habitat in a manner that would aid the 4(b)(2) balancing test. The higher the conservation value of an area, the greater the benefit of sections 7's requirements that federal agency action not adversely modify the area.

The teams first scored each habitat area based on five factors related to the quantity and quality of the physical and biological features. For some of these factors the teams relied on their consultation experience in considering the extent to which habitat protection or improvement could be achieved through section 7 consultation. They next considered each area in relation to other areas and with respect to the population occupying that area. Based on a consideration of the raw scores for each area, and a consideration of that area's contribution in relation to other areas and in relation to the overall population structure of the ESU, the teams rated each habitat area as having a "high," "medium" or "low" conservation value. The teams did not discount the conservation value of any specific area based on a presumption that the section 7 prohibition against jeopardy would protect the habitat regardless of whether it was designated as critical habitat (to ensure that coextensive benefits would be counted equitably against coextensive costs).

Areas rated "high" are likely to contribute the most to conservation of an ESU, while those rated "low" are likely to contribute least. A rating of "high" carries with it a judgment that this area contributes significantly to conservation. A rating of "low" does

not mean an area has no conservation value (and therefore there would be no benefit of designation), nor does it mean there would be no impact on conservation of the ESU if the habitat were adversely modified. The benefit of designating a habitat area with a low conservation value will depend on the reasons the area received a “low” rating, on the conservation value of other habitat areas available to the ESU, and on whether nearby habitat areas are designated.

As discussed earlier, the scale we chose for the “specific area” referred to in section 3(5)(A) was occupied stream reaches within a watershed, delineated by the USGS as a HUC5. (Throughout this report we refer to HUC5s as watersheds, and the occupied stream reaches within a watershed as habitat areas.) There were some complications with this delineation that required us to adapt the approach for some areas. In particular, a large stream or river might serve as a connectivity corridor to and from many watersheds, yet be imbedded itself in a watershed. In any given watershed through which it passes, the stream may have a few or several tributaries. This is illustrated by the map in Figure 1. In this example, a connectivity corridor is imbedded in the watershed designated as “07.” The connectivity corridor serves the watersheds designated as “05” and “06.” In addition, there is a tributary in “07.” For connectivity corridors embedded in a watershed, we asked the teams of biologists to rate the conservation value of the watershed based on the tributary habitat. We assigned the connectivity corridor the rating of the highest-rated watershed for which it served as a connectivity corridor. This could result in a connectivity corridor with a high rating embedded in a habitat area with a low or medium rating.

The reason for this treatment of connectivity corridors is the role they play in the salmon’s life cycle. Salmon and steelhead are anadromous – born in fresh water, migrating to salt water to feed and grow, and returning to fresh water to spawn. Without a connectivity corridor to and from the sea, salmon cannot complete their life cycle. It would be illogical to consider a spawning and rearing area as having a particular conservation value and not consider the associated connectivity corridor as having a similar conservation value.



Figure 1. Illustration of a connectivity corridor embedded within a watershed (HUC5).

- B) Determine the impact of designating each area as critical habitat
- i) Impact on national security

In addition to considering the economic impacts of designation, NOAA Fisheries is to consider the impact on national security. To determine the impact of designation on national security, we contacted the Department of Defense (DOD) and identified those areas we considered as meeting the definition of critical habitat. We did not limit this inquiry to designation of military bases. We received information from DOD identifying the following 24 military sites where designation may have impacts on national security (NMFS 2004c): (1) Naval Submarine Base, Bangor; (2) Naval Undersea Warfare Center, Keyport; (3) Naval Ordnance Center, Port Hadlock (Indian Island); (4) Naval Radio Station, Jim Creek; (5) Naval Fuel Depot, Manchester; (6) Naval Air Station Whidbey Island; (7) Naval Air Station, Everett; (8) Bremerton Naval Hospital; (9) Fort Lewis (Army); (10) Pier 23 (Army); (11) Yakima Training Center (Army); (12) Puget Sound Naval Shipyard; (13) Naval Submarine Base Bangor security zone; (14) Strait of Juan de Fuca naval air-to-surface weapon range, restricted area; (15) Hood Canal and Dabob Bay naval non-explosive torpedo testing area; (16) Strait of Juan de Fuca and Whidbey Island

naval restricted areas; (17) Admiralty Inlet naval restricted area; (18) Port Gardner Naval Base restricted area; (19) Hood Canal naval restricted areas; (20) Port Orchard Passage naval restricted area; (21) Sinclair Inlet naval restricted areas; (22) Carr Inlet naval restricted areas; (23) Dabob Bay/Whitney Point naval restricted area; and (24) Port Townsend/Indian Island/Walan Point naval restricted area. All of these sites overlap with habitat areas occupied by one or more of the 13 ESUs and under consideration for critical habitat. A number of other sites (primarily armories and small Army facilities) were also assessed and were determined to be outside critical habitat.

At our request both the Army and Navy provided information clarifying site locations and describing the types of military activities that occur at these sites. They also listed the potential changes in these activities and consequent national security impacts that critical habitat designation would cause in these areas. Both military agencies concluded that critical habitat designation at any of these sites would likely impact national security by diminishing military readiness. The possible impacts include: preventing, restricting, or delaying training or testing exercises or access to such sites; restricting or delaying activities associated with vehicle/vessel/facility maintenance and ordinance loading; delaying response times for ship deployments and overall operations; and creating uncertainties regarding ESA consultation (e.g., reinitiation requirements) or imposing compliance conditions that would divert military resources. Also, both military agencies cited their ongoing and positive consultation history with NOAA Fisheries and underscored cases where they are implementing best management practices to reduce impacts on listed salmonids.

Most of the affected DOD sites overlap habitat areas in nearshore zones occupied by Puget Sound chinook or Hood Canal summer-run chum salmon. The overlap consists of approximately 109 miles of shoreline out of the 2,376 miles of total occupied shoreline for these two ESUs. Freshwater and estuarine overlap areas include approximately 20 miles of stream used by Puget Sound chinook salmon and 10 miles used by Upper Columbia River steelhead, representing less than one percent of the total freshwater and estuarine habitat area for these two ESUs.

ii) Impact on tribes

Throughout the course of preparing the proposed designation we consulted with Northwest Indian tribes to determine the impact of critical habitat designation on tribes. Northwest tribes universally advised us that critical habitat designation would have a negative impact on tribal sovereignty and tribal self-governance. The longstanding and distinctive relationship between the federal and tribal Governments is defined by treaties, statutes, executive orders, judicial decisions, and agreements, which differentiate tribal governments from the other entities that deal with, or are affected by, the federal government. This relationship has given rise to a special federal trust responsibility involving the legal responsibilities and obligations of the United States toward Indian Tribes and the application of fiduciary standards of due care with respect to Indian lands, tribal trust resources, and the exercise of tribal rights. Pursuant to these authorities lands have been retained by Indian Tribes or have been set aside for tribal use. These lands are

managed by Indian Tribes in accordance with tribal goals and objectives within the framework of applicable treaties and laws.

The tribes view critical habitat designation of their lands as having an impact on tribal sovereignty and self-governance, which would in turn affect their ability to participate in the many forums in the Northwest affecting all aspects of salmon management, including harvest, hatcheries, hydropower operations, and habitat management. Northwest Indian tribes are regarded as “co-managers” of the salmon resource, along with federal and state managers. This co-management relationship evolved as a result of numerous court decisions establishing the tribes’ treaty right to take fish in their usual and accustomed places. The co-manager relationship is embodied in a number of long-term ongoing management processes, examples include (but are not limited to): Joint Resource Management Plans such as Salmon Fisheries and Steelhead Net Fisheries Affecting Puget Sound Chinook Salmon in 2003-2004 and Puget Sound Comprehensive Chinook Management Plan: Harvest Management Component; Tribal Resource Management Plans such as Tribal Chinook Research in Puget Sound, Washington, Tribal Resource Management Plan for Threatened Snake River Spring/Summer Chinook on the Imnaha River Subbasin in 2002-2003, and, Tribal Resource Management Plan for Snake River Spring/Summer Chinook in the Grand Ronde River in Northeast Oregon; Pacific Management Council and Pacific Salmon Commission; *United States v Oregon*, *United States v Washington* court supervised processes; and in-season management of Columbia River and Puget Sound/Washington Coast fisheries. Similarly there are partnership examples in the areas of hatcheries, habitat, hydropower, and recovery planning.

The tribes thus have existing natural resource programs that assist NOAA Fisheries on a regular basis in providing management information relevant to salmon and steelhead protection throughout the region. Our consultation with the tribes and a series of letters and analyses they have provided indicates that they view the designation of Indian lands as an unwanted intrusion into tribal self-governance, compromising the government-to-government relationship that is essential to achieving our mutual goal of conserving threatened and endangered salmon and steelhead. Further, the tribes indicate that their participation in existing co-manager processes will be compromised by the designation of their lands as they have limited staff and resources (NMFS 2004d).

We concluded that the designation of Indian lands would have a negative impact on the longstanding unique relationship between the tribes and the federal government and have a corresponding negative impact on Pacific salmon protection and management. We considered these impacts to be relevant to the section 4(b)(2) consideration, consistent with recent case law addressing the designation of critical habitat on tribal lands. “It is certainly reasonable to consider a positive working relationship relevant, particularly when the relationship results in the implementation of beneficial natural resource programs, including species preservation.” *Center for Biological Diversity et. al. v. Norton*, 240 F. Supp. 2d 1090, 1105; *Douglas County v. Babbitt* 48 F3d 1495, 1507 (1995)(defining “relevant” as impacts consistent with the purposes of the Act).

iii) Economic impact

In a separate draft report, NOAA Fisheries has documented its conclusions regarding the economic impacts of designating each of the particular areas found to meet the definition of critical habitat (**NMFS 2004e**). The first step was to identify the baseline conditions – the legal and regulatory constraints on economic activity that are independent of critical habitat designation, for example Clean Water Act requirements. Coextensive impacts of the section 7 jeopardy requirement were not considered part of the baseline. Next, from the consultation record, we identified federal activities that might affect habitat and that might result in a section 7 consultation. (We did not consider federal actions, such as the approval of a fishery, that might affect the species directly but not affect its habitat.) We identified nine types of activities and the modifications each type of activity was likely to undergo as a result of section 7 consultation. We developed an expected direct cost for each type of action and projected the likely occurrence of each type of project in each watershed, using existing spatial databases (for example., the U.S. Army Corps of Engineers 404(d) permit database). Finally, we aggregated the costs from the various types of actions and estimated an annual impact, taking into account the probability of consultation occurring and the likely rate of occurrence of that project type.

The economic analysis makes certain simplifying assumptions that may cause costs to be overstated. For example, costs are assigned to all activities within the geographic boundary of the watershed, even though not all federal activities lead to a section 7 consultation. The analysis also makes assumptions about the likely impact of modifications to hydropower projects, when in fact many of the projects included in the analysis may not require modifications. This could not be determined without further analysis, which time did not permit. Nevertheless, the analysis was based on the best information available within the time constraints, and provides a reasonable basis for comparing cost impacts among different areas to inform the designation process.

There were also complications in assigning economic impacts to a single habitat area when in fact the activity in question might have impacts outside that area. For example, a hydroelectric dam will often have downstream effects on flows and temperature that extend beyond the boundary of the habitat area in which the dam is located. Costs of designation could therefore be attributable to any habitat area influenced by dam operations. To simplify the analysis, these costs were assumed to accrue to the designation of the watershed in which the dam or other activity occurred.

The economic analysis presents the costs as a point estimate for each habitat area. The analysis also estimated how much of these impacts would have a local effect versus a regional or national effect. This was accomplished by identifying which of the activity types were likely to have local economic effects (such as instream activities) and which were likely to have broader effects (such as hydropower or federal lands activities). By estimating the number of people within each watershed, the analysis also allowed for a consideration of per capita costs in each. Because there were habitat areas where we wanted the option to consider connectivity corridors separately from the tributaries (such as a high-value connectivity corridor through an otherwise low-value habitat area), we also identified which types of activities were most likely to have tributary impacts and

which were most likely to have connectivity corridor impacts. This allowed us to estimate the separate impact of designating just the tributaries (and therefore the separate benefit of excluding just the tributaries).

The economic analysis used two different discount rates to predict future costs (7 and 3 percent). In conducting our 4(b)(2) cost-effectiveness analysis we focused on the estimates that used the 7 percent rate. We also tested our methods against the estimates using the 3 percent rate and found the results would not change.

C) Determine whether benefits of exclusion outweigh benefits of designation

We first considered impacts to national security and impacts to tribal relations and tribal sovereignty.

a) Balancing designation against impacts on national security

The principal benefit of designating critical habitat is that federal agencies must ensure that any actions they authorize, fund or carry out are not likely to result in the destruction or adverse modification of critical habitat. This complements the section 7 provision that federal agencies ensure their actions are not likely to jeopardize the continued existence of a listed species. All activities of the Department of Defense that may affect listed salmon and steelhead are subject to the section 7 consultation requirements. As described above, there were 24 areas with national security impacts. The areas include a total of 109 linear miles of nearshore habitat (less than five percent of the 2,376 total miles) for Puget Sound chinook and Hood Canal chum, 20 stream or estuary miles used by Puget Sound chinook, and 10 stream miles used by Upper Columbia River steelhead (representing less than one percent of the total freshwater and estuarine habitat area for these two ESUs). The Teams assessing conservation values for these overlap areas concluded that all of them were of high conservation value to the respective ESUs. However, the overlap areas are a small percentage of the total area for the affected ESUs. Designating these DOD sites would likely reduce the readiness capability of the Army and Navy, both of which are actively engaged in training, maintaining, and deploying forces in the current "war on terrorism." Therefore we concluded that the benefits of exclusion outweigh the benefits of designation and are not proposing to designate these DOD sites as critical habitats.

b) Balancing designation against impacts to tribal sovereignty and participation in conservation activities

The principal benefit of designating critical habitat is that federal agencies must ensure that any actions they authorize, fund or carry out are not likely to result in the destruction or adverse modification of critical habitat. This complements the section 7 provision that federal agencies ensure their actions are not likely to jeopardize the continued existence of a listed species. There are many activities on Indian lands that may trigger a section 7 consultation, such as forest management and development. Another possible benefit is

that the designation of critical habitat can serve to educate the public regarding the potential conservation value of an area. This may focus and contribute to conservation efforts by clearly delineating areas of high conservation value for certain species.

We considered the benefits of excluding Indian lands from designation as: 1) the furtherance of established national policies, our federal trust obligations and our deference to the tribes in management of natural resources on their lands; 2) the maintenance of effective long term working relationships to promote the conservation of salmon and steelhead on an ecosystem-wide basis across four states; 3) the allowance for continued meaningful collaboration and cooperation in scientific work to learn more about the conservation needs of the species on an ecosystem-wide basis; and 4) continued respect for tribal sovereignty over management of natural resources on Indian lands through established tribal natural resource programs.

We conclude that the current co-manager process addressing activities on an ecosystem-wide basis across four states is currently beneficial to the fulfillment of the conservation of the listed ESUs and for our tribal trust responsibilities and relationship. Exclusion of Indian lands from critical habitat designation would contribute to the continued full involvement of Northwest Indian tribes in the co-manager process. We consider this benefit to outweigh the benefit of designating Indian lands as critical habitat. Indian lands comprise only a minor portion (less than 3 percent) of the total habitat under consideration for these ESUs. Depending upon the ESU, Indian lands account for zero to 13 percent of the total habitat area for these ESUs. (For nine ESUs the Indian lands total less than one percent, with only one ESU greater than five percent.) These percentages are likely overestimates as they include all habitat area within reservation boundaries. In many cases, a considerable portion of the land within the reservation boundaries is no longer held in trust for the tribe or in fee status by individual tribal members. Moreover, Indian tribes are fully aware of the conservation value of their lands (as documented in tribal letters), so the benefit of public notice is small.

Based on these considerations, we recommend the agency exercise its discretion under section 4(b)(2) to exclude Indian lands from the proposed critical habitat designation for the 13 ESUs of salmon and steelhead subject to the Northwest region's jurisdiction. The Indian lands specifically recommended for exclusion are those defined in the Secretarial Order, including: 1) lands held in trust by the United States for the benefit of any Indian tribe, 2) land held in trust by the United States for any Indian Tribe or individual subject to restrictions by the United States against alienation, 3) fee lands, either within or outside the reservation boundaries, owned by the tribal government; and, 4) fee lands within the reservation boundaries owned by individual Indians.

c) Balancing designation against economic impacts

Finally we examined areas that would be eligible for exclusion if we considered the economic impact to outweigh the benefit of designation. In determining whether the economic benefit of excluding a habitat area might outweigh the benefit to the species of designation, we considered the following factors: 1) the policy goal of exercising our

discretion to further conservation of listed species; 2) the policy goal of adopting regulations that minimize total economic impacts and disparate economic impacts; 3) the recognition that because we are considering coextensive impacts, the dollar benefits of exclusion are likely overstated, 4) the difficulty of balancing dissimilar values (dollars versus benefits to species conservation); and 5) the limited time frame in which to make decisions. Consideration of these factors led us to a cost-effectiveness approach (described above) in which we gave priority to excluding habitat areas with a relatively lower benefit of designation and a relatively higher economic impact.

The circumstances of most of the listed ESUs seem well suited to a cost-effectiveness approach. Pacific salmon and steelhead are wide-ranging species and occupy numerous habitat areas with thousands of stream miles. Most of these areas contain “physical or biological features” we have identified as “essential to conservation” of the ESUs. Not all these areas, however, are of equal importance to conserving an ESU, as evidenced by the biological teams’ rating of different areas as high, medium or low. In many cases it may therefore be possible to construct different scenarios for achieving conservation. Scenarios might have more or less certainty of achieving conservation, and more or less economic impact.

To give effect to the conservation goal we decided to test a two-step approach. In the first step we would identify all areas eligible for exclusion. Eligibility would be determined based on a dollar impact. In the second step we would ask the biological teams to consider whether excluding any of the eligible areas, either alone or in combination with other eligible areas, would significantly impede conservation. For the first step, we sought criteria that would result in a list of eligible areas with a meaningful cost savings. At the same time, because of the time limitations, we did not want to develop a list that would then require extensive modification as a result of applying biological judgment in the second step.

We also sought criteria that would account for the fact that recovery planning processes are not yet complete. The timeframes associated with the designation process necessarily lead to decisions regarding designation of critical habitat in advance of recovery planning. This is a factor for the agency to consider in deciding whether to exclude any areas.

To better determine the most appropriate criteria, we first constructed alternative scenarios for the initial exclusion step. In a scenario similar to a “no action” alternative, we did not exclude any areas. This scenario would provide the maximum benefit of designation to the species, and a useful point of comparison for the economic benefit possible from other scenarios. In another scenario we simply considered as eligible for exclusion all habitat areas with a low- or medium-value rating. In a third scenario we developed dollar thresholds for low- and medium-value areas likely to result in meaningful economic reductions, but that would not in most cases automatically make all the low- and medium-value habitat areas eligible for exclusion.

In addition to overall economic impact, we were concerned about equitable allocation of impacts. Per capita local impacts tended to be higher in less developed areas where there are fewer people. To carry out the policy objective of an equitable distribution of the regulatory burden, we also included criteria in the third scenario making areas eligible for exclusion based on per capita impact. In none of the scenarios did we consider habitat areas for exclusion if they had a high-value. Based on the rating process used by the biological teams, we judged that exclusion of any of the high-value areas would significantly impede conservation.

Selection of criteria for the third scenario was complicated by the fact that the circumstances of each ESU are unique. For example, none of the habitat areas occupied by Columbia River Chum or Hood Canal Summer Chum received a low-value rating. Some ESUs had a higher proportion of low- and medium-value areas than others. Different criteria could therefore be expected to produce different results for different ESUs. In developing criteria for the third scenario, we chose dollar thresholds that we anticipated would lead most directly to a cost-effective scenario, recognizing that the question of whether the economic benefit of excluding any particular area outweighs the benefit of designating that area can only be answered in the context of the overall designation – the conservation impact of excluding any particular area may depend on which other areas are being excluded, and therefore the benefit of designation may depend on what else is being designated.

As initial criteria for identifying habitat areas eligible for exclusion, we selected “impacts greater than \$85,000” and “per capita impacts greater than \$100” for low-value areas. For medium-value areas, we selected “impacts greater than \$300,000” and “per capita impacts greater than \$500.” These numbers do not represent an objective judgment that, for example, a low-value area is worth no more than \$85,000. The statute directs us to balance dissimilar interests with a limited amount of time (and therefore information). It emphasizes the discretionary nature of the decision to exclude. Moreover, while our approach follows the Tenth Circuit’s direction to consider coextensive economic impacts, we nevertheless must acknowledge that all of the cost estimates are likely higher than the true cost of a critical habitat designation. Finally, the cost estimates developed by our economic analysis do not result in a distribution with obvious break points that would lead to a logical division between “high,” “medium,” and “low” costs that might correspond to high, medium and low conservation value. Given these factors, a judgment that any particular dollar threshold is objectively “right,” would be neither necessary nor possible. Rather, what economic impact is “high” and therefore might outweigh the benefit of designating a medium- or low-value habitat area is a matter of discretion and depends on the policy context. The policy context in which we carry out this task led us to select dollar thresholds that would likely lead to a cost-effective designation in a limited amount of time with a relatively simple process.

The following table illustrates the results of each scenario for each ESU (L=Low and M=Medium). Where a habitat area contains tributaries with one rating and a connectivity corridor with another rating, the impacts are separated and attributed accordingly. For example, if a habitat area has a low-value tributary rating and a high-value connectivity

corridor, the economic impact of designating the high-value connectivity corridor is represented in the “high” category and the impact of designating the tributaries is represented in the “low” category.

Table 1. Comparison of alternative scenarios for excluding certain areas from critical habitat designation under ESA section 4(b)(2). The cumulative potential economic impact of designating habitat areas within watersheds is presented for the low conservation value, medium conservation value, high conservation value, and all habitat areas for each Evolutionarily Significant Unit (ESU). The reduction in potential economic impact is then presented for each of the three scenarios. Economic impacts reflect those for watersheds and connectivity corridors within the spawning and rearing range of a given ESU.

		<u>Potential Reduction in Maximum Economic Impact</u> <i>(reduction in annual economic impact of section 7 consultations)</i>		
Conservation value of HUC5 watersheds	<u>Maximum economic impact</u>	<u>Scenario 1</u>	<u>Scenario 2</u>	<u>Scenario 3</u>
<i>L = low value M = medium value H = high value</i>	<i>Annual economic impact of section 7 consultations</i>	<i>No areas eligible for exclusion</i>	<i>All low-value(L) and medium-value (M) areas eligible for exclusion. For L and M areas with high-value (H) migration/connectivity corridors, only tributaries are eligible for exclusion.</i>	<i>All low-value (L) areas with an economic impact > \$85,000/yea or >\$100/year/personr, and all medium-value (M) areas with an economic impact of \$300,000/year or > \$500/year/person, are eligible for exclusion</i>
<u>1. Puget Sound chinook ESU</u>				
L	\$9,122,630	\$0	-\$9,122,630	-\$9,122,630
M	\$26,942,960	\$0	-\$12,011,355	-\$10,863,536
H	\$59,308,773	\$0	\$0	\$0
Total	\$95,374,362	\$0	-\$21,133,985	-\$19,986,165
<u>2. Lower Columbia River chinook ESU</u>				
L	\$4,778,605	\$0	-\$4,778,605	-\$4,778,605
M	\$7,341,934	\$0	-\$5,964,949	-\$4,758,949
H	\$22,956,910	\$0	\$0	\$0
Total	\$35,077,449	\$0	-\$10,743,554	-\$9,537,554
<u>3. Upper Willamette River chinook ESU</u>				
L	\$6,305,620	\$0	-\$4,533,063	-\$4,351,484
M	\$3,650,637	\$0	-\$3,550,416	-\$2,208,542
H	\$19,842,302	\$0	\$0	\$0
Total	\$29,798,559	\$0	-\$8,083,478	-\$6,560,026
<u>4. Upper Columbia River spring-run chinook ESU</u>				

L	\$0	\$0	\$0	\$0
M	\$7,039,409	\$0	-\$3,887,693	-\$3,719,820
H	\$9,460,158	\$0	\$0	\$0
Total	\$16,499,567	\$0	-\$3,887,693	-\$3,719,820
<u>5. Oregon Coast coho ESU</u>				
L	\$2,792,602	\$0	-\$2,792,602	-\$2,749,443
M	\$7,109,844	\$0	-\$6,993,549	-\$4,721,472
H	\$8,543,693	\$0	\$0	\$0
Total	\$18,446,139	\$0	-\$9,786,151	-\$7,470,916
<u>6. Hood Canal summer-run chum ESU</u>				
L	\$0	\$0	\$0	\$0
M	\$1,667,433	\$0	-\$1,667,433	-\$1,403,542
H	\$5,956,887	\$0	\$0	\$0
Total	\$7,624,320	\$0	-\$1,667,433	-\$1,403,542
<u>7. Columbia River chum ESU</u>				
L	\$0	\$0	\$0	\$0
M	\$528,894	\$0	-\$528,894	-\$364,630
H	\$13,884,155	\$0	\$0	\$0
Total	\$14,413,049	\$0	-\$528,894	-\$364,630
<u>8. Ozette Lake sockeye ESU</u>				
L	\$0	\$0	\$0	\$0
M	\$0	\$0	\$0	\$0
H	\$2,720	\$0	\$0	\$0
Total	\$2,720	\$0	\$0	\$0
<u>9. Upper Columbia River <i>O. mykiss</i></u>				
L	\$301,529	\$0	-\$301,529	-\$301,529
M	\$11,373,956	\$0	-\$8,202,275	-\$7,858,922
H	\$12,883,253	\$0	\$0	\$0
Total	\$24,558,737	\$0	-\$8,503,804	-\$8,160,451
<u>10. Snake River Basin <i>O. mykiss</i></u>				
L	\$1,424,840	\$0	-\$655,679	-\$533,241
M	\$3,603,552	\$0	-\$2,604,031	-\$1,310,777
H	\$30,717,969	\$0	\$0	\$0
Total	\$35,746,361	\$0	-\$3,259,711	-\$1,844,018
<u>11. Middle Columbia River <i>O. mykiss</i></u>				
L	\$2,856,527	\$0	-\$2,536,121	-\$2,360,976
M	\$5,771,651	\$0	-\$4,368,685	-\$2,832,983

H	\$28,881,916	\$0	\$0	\$0
Total	\$37,510,095	\$0	-\$6,904,806	-\$5,193,960
12. Lower Columbia River <i>O. mykiss</i>				
L	\$796,793	\$0	-\$783,193	-\$783,193
M	\$8,932,205	\$0	-\$7,686,052	-\$6,869,354
H	\$24,177,545	\$0	\$0	\$0
Total	\$33,906,543	\$0	-\$8,469,245	-\$7,652,547
13. Upper Willamette <i>O. mykiss</i>				
L	\$5,032,938	\$0	-\$3,877,798	-\$3,511,962
M	\$962,219	\$0	-\$771,661	\$0
H	\$5,164,357	\$0	\$0	\$0
Total	\$11,159,514	\$0	-\$4,649,460	-\$3,511,962

Scenario 1 illustrates the total estimated economic impact of applying section 7 requirements to habitat-modifying actions in all of the habitat areas within an ESU. Scenario 2 illustrates the estimated potential reduction in economic impact if all of the low- and medium-value habitat areas are excluded, and Scenario 3 illustrates the estimated potential reduction in economic impact if low- and medium-value habitat areas above a particular dollar threshold are excluded. The cost reductions shown are only potential reductions. Until the second step of the analysis is completed, it is not possible to determine the final estimated reduction that scenario would yield. In considering the scenarios, we kept in mind that both the costs and reductions to cost are likely overstated because the jeopardy requirement of section 7 still applies. Nevertheless, examining alternatives gives a useful picture of the relative outcomes of different scenarios.

Scenario 1 would maximize the goal of achieving conservation. However, it would not serve the other goal of efficiently reducing the cost of conservation. Scenario 2 furthers the goal of reducing economic impacts, but without any sensitivity to the fact that for some habitat areas the cost is relatively small so the incremental benefit of excluding that area is small (making it problematic to conclude that the benefit of exclusion outweighs the benefit of designation without a more refined analysis of whether a low-value area is a “low-low” or a “high-low”). Scenario 2 is also not sensitive to the fact that for most ESUs, eliminating all low- and medium-value habitat areas is likely to significantly impede conservation. While the second step of the test (application of biological judgment) would address this concern, it would not do so in an efficient way – that is, it would not efficiently lead to the low-cost areas being favored for designation and the high cost areas favored for exclusion. For Scenario 2, it is unlikely that all of the potential reductions would be retained through the second step. The end result also may not be economically efficient unless there are additional iterative steps that allow for consideration of economic impacts within the context of the goal of achieving conservation.

In contrast, Scenario 3 is sensitive to the fact that excluding some low and medium areas will save less than excluding other low and medium areas. It is also sensitive to the fact that excluding all low and medium areas in all ESUs would not result in an efficient second step of the process. Based on these considerations, we adopted the two-step test, first applying the economic criteria described for Scenario 3 to develop a set of recommended exclusions. In the second step of the process, we asked the biological teams whether excluding any of the habitat areas identified in the first step would significantly impede conservation. The teams considered this question in the context of all of the areas eligible for exclusion as well as the information they had developed in providing the initial conservation ratings. Where the teams concluded that conservation would be significantly impeded, we do not recommend exclusion. In the section below entitled “Areas Recommended for Exclusion” we describe the results of this two-step process.

We note that other approaches could be taken and other policy considerations could be applied to reach a different result. For example, in the first step, different dollar thresholds could be selected, including a dollar threshold above which high-value areas would be considered for exclusion. In the second step, other tests could be applied, such as asking whether additional areas could be excluded without significantly impeding conservation (although exclusion of these low cost areas would not be as cost-efficient). Or in the second step, policy-makers might favor other goals over conservation.

Table 1 does not include the estimated cost of designating the mainstem Columbia River below its confluence with the Sandy River. That portion of the Columbia is not contained in any watershed (HUC5) delineated by the USGS, so the economic impact of designating it as critical habitat is not reflected in the estimates based on the costs for each watershed. We independently estimated the economic impact of designating this portion of the mainstem as \$583,000 annually (NMFS 2004f). For those ESUs in the Columbia Basin, the full co-extensive economic impact of designation would also include this figure. This portion of the Columbia River connectivity corridor has a high conservation value and was not considered for exclusion.

The Table also does not include the estimated cost associated with operation and maintenance of the Federal Columbia River Power System (FCRPS). The FCRPS is a collection of 31 dams and reservoirs operated by the Corps of Engineers and Bureau of Reclamation. The Bonneville Power Administration is the federal agency responsible for marketing power from the FCRPS and is also responsible for funding and overseeing a fish and wildlife program. Since the 1980s, the federal agencies have adjusted dam infrastructure and operations to improve survival of juvenile and adult salmon migrating through the Snake and Columbia Rivers. We could not reasonably assign many of the FCRPS costs to a particular watershed (or segment of the “connectivity corridor”) because dam and reservoir operations are highly integrated and affect conditions in areas above and below their physical location.

In a recent report, NOAA Fisheries estimated these agencies spend approximately \$282.9 million per year on dam modifications and the fish and wildlife program (NMFS 2004e)

(see Table 2 below). In addition, the report notes that about 10 percent of the productive capacity of the FCRPS is devoted to flow and spill measures aimed at improving salmon survival. The cost of these measures (which includes lost revenue as well as power purchases) varies annually depending on the water year and power markets. In 2003, BPA estimated these costs at \$250 million. Not all of the fish and wildlife costs are attributable to ESA section 7 consultations on listed salmon and steelhead. For example, they include funding for wildlife programs, funding for non-salmon fisheries programs, funding for mitigation hatcheries unrelated to ESA requirements, repayment of capital costs incurred prior to ESA listings, funding the Power and Conservation Planning Council, etc. In addition, the Pacific Northwest Electric Power Planning and Conservation Act (16 United States Code Chapter 12H (1994 & Supp. I 1995)) requires the federal agencies to fund a fish and wildlife program and to balance fish and wildlife needs with power production in the operation of the system. Many of the federal agency costs described in Table 2 are attributable to requirements under that Act.

We did not have information available at the time of this report to determine which of these costs might be attributable to coextensive section 7 costs. For those ESUs in the Columbia Basin, the full coextensive economic impact of designation would include some portion of these costs. The entire Snake and Columbia connectivity corridors support juvenile and adult migrations. Consistent with our treatment of connectivity corridors, they have a high conservation value and so were not considered for exclusion.

Table 2. Estimated costs for all fish and wildlife programs associated with the FCRPS.

BPA Program Element	Cost (in \$millions)
Fish & Wildlife Direct Program	139
Treasury Repayment for Past Capital Investments	56.7*
Operations and Maintenance (for fish)	33.4
Lower Snake River Comp. Plan Hatcheries	15.1
Power Planning Council	4
Transmission (attributable to fish and wildlife)	34.7
Subtotal	282.9
In addition, about 10% of the productive capacity of the Federal hydropower system is devoted to spill and flow augmentation. The cost of these measures varies considerably from year to year. In 2003 it was approximately \$250m.	

**This amount represents depreciation, amortization and interest on fish and wildlife capital investment, both for past Congressional appropriations of approximately \$85 million annually for Corps of Engineers capital improvement at dams, and for the capital*

portion of BPA Fish and Wildlife program (for example, to construct hatcheries), funded by Treasury bonds.

- 4) Determine whether the cumulative effect of the recommended exclusions will result in extinction of the species

For exclusions based on impacts to tribes we mapped Indian lands and considered how exclusion of each would affect the conservation of the ESU. Overall Indian lands comprise less than 3 percent of the stream miles occupied by the ESUs. Table 2 displays the number of stream miles within reservation boundaries for each ESU. These numbers are a maximum estimate since we are recommending for exclusion only those lands within reservation boundaries that are defined as “Indian lands” by the Secretarial Order. For many reservations, a significant proportion of the land is no longer held in trust for the tribe, but is fee land owned by non-Indians (for example, an estimated 20 percent of land area on the Yakama reservation is owned by non-Indians (Yakima Herald 2000)) .

Table 3. Stream miles meeting the definition of critical habitat, within the boundaries of an Indian reservation, by ESU.

ESU	Total Eligible Miles	Tribal Lands	Percent
Puget Sound Chinook	2148	53.1	2.5
Lower Columbia River Chinook	1440	0.0	0
Upper Willamette River Chinook	1788	0.0	0
Upper Columbia Spring Chinook	976	0.0	0
Oregon Coast Coho	6665	2.8	.04
Hood Canal Summer Chum	88	6.2	7.01
Columbia River Chum	657	0.0	0
Ozette Lake Sockeye	40	0.4	1.1
Upper Columbia River Steelhead	1319	58.8	4.5
SNAKE RIVER STEELHEAD	7989	260.6	3.3
MID-COLUMBIA RIVER STEELHEAD	6264	795.5	12.7
Lower Columbia River Steelhead	2656	0.0	0
Upper Willamette River Steelhead	1822	8.9	0.5

Section 4(b)(2) does not allow the agency to exclude areas if exclusion will result in extinction of the species. Since we have not recommended excluding any habitat areas if the exclusion would significantly impede conservation, we have determined for each ESU that the exclusion of the areas we recommend, either individually or collectively, will not significantly impede conservation. Given that conclusion, we also conclude that none of the exclusions we recommend will result in extinction of the species.

AREAS RECOMMENDED FOR EXCLUSION – BY ESU

Having developed a two-step process for the 4(b)(2) balancing test, we applied it to each ESU separately. Many of the habitat areas under consideration meet the definition of critical habitat for more than one ESU, that is, they have overlapping critical habitat. Also, in the Snake River basin, there are listed ESUs with critical habitat currently designated that are not part of this rulemaking (Snake River Fall Chinook, Snake River Spring/Summer Chinook, and Redfish Lake Sockeye). The habitat areas for some ESUs also overlap proposed critical habitat for the listed Bull Trout.

In areas of overlap, we could have decided that the critical habitat for one ESU would be designated first. Protection for the first ESU would then be part of the baseline for the second or third ESU, so there would be little impact from the subsequent designations. We decided against this approach for several reasons. The decision of which ESU went first could have a major effect on the incremental impact of the subsequent ESUs, creating an opportunity to manipulate the outcome. In addition, if one ESU were to recover and be de-listed, its critical habitat designation would also be gone, leaving the remaining designations in place. In contrast, an approach that considered the independent effect of each designation would accurately represent the situation if one of the designations were no longer to apply. Moreover, because of the cost-effectiveness framework we have adopted, so long as we do not count these designations as part of the baseline when we consider the benefit of designation for each ESU, we will still have an accurate picture of the benefits of designation versus the benefits of exclusion.

Similarly, we did not consider the existing critical habitat designations for Snake River salmon to diminish either the impacts or the benefits of designating critical habitat for Snake River steelhead. As with the overlapping designations, the cost-effectiveness framework we have adopted continues to give us a meaningful comparison of relative impacts and benefits. In addition, the agency has stated its intention to revisit the existing critical habitat designations for Snake River ESUs, if appropriate, following completion of related rulemaking (67 Fed. Reg. 6215, Feb. 11, 2002). Given the uncertainty that these designations will remain in place in their current configuration, we decided not to include them in the baseline.

One result of this decision is that there are some areas that are designated for one ESU but excluded for another, because the differing habitat needs may lead to an area being rated high-value for one ESU but medium- or low-value for another. In recommending exclusions, we did not make a separate effort to match exclusions. Consistent with our approach throughout, we considered the impacts of designation and the benefits of designation for each ESU based on its individual circumstances.

1. Puget Sound chinook salmon

The Puget Sound chinook ESU was listed as a threatened species in 1999 (64 FR 14308; March 24, 1999). The ESU includes all naturally spawned populations of chinook

salmon from rivers and streams flowing into Puget Sound including the Strait of Juan De Fuca from the Elwha River, eastward, including rivers and streams flowing into Hood Canal, South Sound, North Sound and the Strait of Georgia in Washington). The agency recently conducted a review to update the ESU's status, taking into account new information and considering the net contribution of hatchery efforts in the ESU. We have proposed that Puget Sound chinook salmon remain listed as threatened (69 FR 33102; June 14, 2004). Additionally, we have proposed that the listing include twenty-two hatchery programs also considered part of the ESU.

There are 2,148 occupied stream miles meeting the definition of critical habitat for this ESU. These are grouped into habitat areas in 61 watersheds within the spawning range of this ESU (for ease of reference these watersheds have been organized into 18 units based on their associated subbasin). Twelve habitat areas received a low rating, nine received a medium rating, and 40 received a high rating of conservation value to the ESU (NMFS 2004a). Nineteen nearshore marine areas (encompassing 2,376 miles) also received a rating of high conservation value. Figure A.1(a) shows a map of Puget Sound watersheds with habitat areas occupied by the ESU and eligible for designation.

Recovery Planning Status

A Technical Recovery Team (TRT) has been formed to assist recovery planning efforts in Puget Sound. In 2001 and 2002, the Puget Sound TRT released technical reports describing independent populations of chinook salmon in Puget Sound (Ruckelshaus et al. 2001, 2002). To date the Puget Sound TRT has identified 22 independent chinook populations: the North Fork Nooksack River, South Fork Nooksack River, Lower Skagit River, Upper Skagit River, Lower Sauk River, Suitttle River, Upper Sauk River, Cascade River, North Fork Stillaguamish River, South Fork Stillaguamish River, Skykomish River, Snoqualmie River, North Lake Washington, Cedar River, Green/Duwamish River, Puyallup River, White River, Nisqually River, Skokomish River, Dosewallips River, Dungeness River, and Elwha River. Some naturally spawning aggregations of chinook were not recognized as part of these populations (e.g., the Deschutes River in South Puget Sound). The TRT has concluded that chinook salmon using smaller streams in south and central Puget Sound probably did not occur there in large numbers historically and were not independent populations. It is not clear whether these smaller streams are occupied due to recent hatchery releases or whether historically they supported small satellite "sink" populations that were dependent on larger independent "source" populations (Ruckelshaus et al. 2002; B. Graeber, NMFS, personal communication).

The Puget Sound TRT has identified five geographic regions of diversity and correlated risk in Puget Sound that are intended to assist in evaluating ESU-wide recovery planning (Ruckelshaus et al. 2002). The regions are based on similarities in hydrographic, biogeographic, geologic, and catastrophic risk characteristics and where groups of populations have evolved in common (Ruckelshaus et al. 2002). The Puget Sound chinook salmon ESU occupies all of these regions. Recovery planning will likely emphasize the need for a geographical distribution of viable populations across the range of such regions (Ruckelshaus et al. 2002, McElhany et al. 2003). Recovery planners are developing watershed assessments and specific plans for each watershed. Draft plans are

expected in June of 2005. The Biological Team considered the TRT products in rating each watershed, but did not have the benefit of the watershed plans. We anticipate that, as recovery planning proceeds, we will have better information and may revise our recommendations regarding critical habitat designation.

Military and Indian Lands

There are nine facilities located within the range of the Puget Sound chinook salmon ESU, controlled by the military, with Integrated Natural Resource Management Plans: (1) Naval Submarine Base, Bangor; (2) Naval Undersea Warfare Center, Keyport; (3) Naval Ordnance Center, Port Hadlock (Indian Island); (4) Naval Radio Station, Jim Creek; (5) Naval Fuel Depot, Manchester; (6) Naval Air Station Whidbey Island; (7) Naval Air Station, Everett; (8) Fort Lewis (Army); and (9) Pier 23 (Army). Altogether, these military lands contain about 12 occupied stream miles, or 0.6 percent of the total stream miles occupied by this ESU. As described previously, and in separate documents, we have determined that the military's management of lands covered by these INRMPs provides benefits to the species. The occupied stream reaches within these military lands therefore do not qualify for designation pursuant to section 4(b)(1) of the ESA.

There are 10 Indian reservations within the spawning range of Puget Sound chinook. Within the boundaries of these reservations there are approximately 53 occupied stream miles, or about 2.5 percent of the total stream miles occupied by this ESU. This is likely an overestimate of occupied stream miles on Indian lands, as not all of the land within reservation boundaries may be Indian lands. As described previously, and in separate documents, we have determined that the benefits of excluding the habitat areas on these Indian lands outweigh the benefits of designating them.

Consideration of Economic Impacts and Recommendations for Exclusions

Table A.1 shows the estimated total and per capita local economic impacts for each of the habitat areas. Where an area contains both a connectivity corridor and tributary habitat, the table shows the impacts of designating each.

Of the 12 low-value habitat areas, only one contains a connectivity corridor, which is also rated low. The economic impact for each of these low-value areas exceeded the Scenario 3 criteria, making these areas eligible for exclusion. Of the nine medium-value habitat areas, one contains a medium-value connectivity corridor and one contains a high-value connectivity corridor. The economic impact for three of the medium-value areas exceeded the Scenario 3 criteria. One of the medium-value areas – Lake Washington – had the highest economic impact score of all areas evaluated for any ESU (\$15 million). However, this area also serves as a connectivity corridor for the high-value Cedar River area. The economic impacts associated with designating the tributary-only portion of the habitat area did not exceed the Scenario 3 criteria, so no part of this area is proposed for exclusion.

In summary, we recommend that 12 low conservation value habitat areas and four medium-value habitat areas be proposed for exclusion because the economic benefits of exclusion outweigh the benefits of designation. The map in Figure A.1(b) shows those

habitat areas being recommended for exclusion. They include 389 total stream miles, representing 18 percent of the total stream miles occupied by the ESU. The reduction in estimated economic impact is approximately 19 percent of the impact that would occur if all habitat areas were designated. Combined with the excluded habitat areas on Indian lands, and the lands precluded from designation by an INRMP, the total stream miles not recommended for designation represent approximately 21.1 percent of the total stream miles occupied by this ESU.

We have concluded that exclusion of any of these areas alone, or of all areas in combination, would not significantly impede conservation of the Puget Sound chinook ESU. The habitat areas being recommended for designation as critical habitat include approximately 1,695 stream miles. These habitat areas are well distributed through, and representative of, the five geographic regions of diversity and correlated risk identified by the Puget Sound TRT. The recommended critical habitat designation for the Puget Sound chinook ESU will complement recovery planning efforts aimed at conserving the geographic distribution and diversity of the 22 demographically independent chinook populations in this ESU.

2. Lower Columbia River chinook salmon

The Lower Columbia River chinook ESU was listed as a threatened species in 1999. The ESU includes all naturally spawned populations of chinook salmon from the Columbia River and its tributaries from its mouth at the Pacific Ocean upstream to a transitional point between Washington and Oregon east of the Hood River and the White Salmon River, and includes the Willamette River to Willamette Falls, Oregon, exclusive of spring-run chinook salmon in the Clackamas River (64 FR 14308; March 24, 1999). The agency recently conducted a review to update the ESU's status, taking into account new information and considering the net contribution of artificial propagation efforts in the ESU. We have proposed that Lower Columbia River chinook salmon remain listed as threatened (69 FR 33102; June 14, 2004). Additionally, we have proposed that the listing include seventeen artificial propagation programs also considered part of the ESU.

There are 1,440 occupied stream miles meeting the definition of critical habitat for this ESU. These are grouped into habitat areas in 47 watersheds within the spawning range of the ESU (for ease of reference these watersheds have been organized into 10 units based on their associated subbasin). Four watersheds received a low rating, 13 received a medium rating, and 30 received a high rating of conservation value to the ESU (NMFS 2004a). The lower Columbia River corridor downstream of the spawning range was also considered to have a high conservation value. Figure A.2(a) shows a map of Lower River Columbia watersheds occupied by the ESU and eligible for designation.

Recovery Planning Status

The Willamette/Lower Columbia TRT identified 31 historical demographically independent chinook salmon populations in this ESU (Myers et al. 2003). It is estimated that eight to ten historical populations in the ESU have been extirpated or nearly so. The

TRT has grouped populations within the ESU into three life-history types (spring-, fall-, and late fall-run) and three ecological spawning zones (Coast Range, Cascade, and Columbia Gorge) (McElhany et al. 2002). Recovery planning will likely emphasize the need for a geographical distribution of viable populations across the range of life-history types and ecological zones (Ruckelshaus et al. 2002, McElhany et al. 2003). Recovery planners are developing subbasin assessments and specific plans for each subbasin. Draft plans are expected for the Washington areas by the end of 2004 and for the Oregon areas by the end of 2005. The Biological Team considered the TRT products in rating each habitat area, but did not have the benefit of the subbasin plans. We anticipate that, as recovery planning proceeds, we will have better information and may revise our recommendations regarding critical habitat designation.

Military and Indian Lands

There are no lands controlled by the military or designated for its use and covered by an INRMP within the spawning range of Lower Columbia River chinook. There are also no Indian reservations within this range.

Consideration of Economic Impacts and Recommendations for Exclusions

Table A.2 shows the estimated total and per capita local economic impacts for each of the habitat areas. Where an area contains both a connectivity corridor and tributary habitat, the table shows the impacts of designating each.

There are four low conservation value habitat areas, none of which contain a connectivity corridor. The economic impact for all four low-value areas exceeded the Scenario 3 criteria, making these areas eligible for exclusion. Of the 13 areas with a medium rating, five contain a high-value connectivity corridor and one contains a medium-value connectivity corridor. These medium-value areas containing connectivity corridors did not exceed the Scenario 3 criteria and were not considered eligible for exclusion. Six of the remaining seven medium conservation value areas (that do not contain connectivity corridors) exceeded the Scenario 3 criteria and were considered eligible for exclusion. One of these eligible medium-value areas (the Kalama River watershed), however, is not recommended for exclusion from designation. Excluding the Kalama River would significantly impede conservation of the ESU because it supports both fall- and spring-run fish, represents a substantial amount of the remaining spring-run habitat for this ESU, and will likely be emphasized in recovery planning efforts for Lower Columbia River salmon.

In summary, we recommend that four low-value habitat areas and five medium-value habitat areas be proposed for exclusion because the economic benefits of exclusion outweigh the benefits of designation. The map in Figure A.2(b) shows those habitat areas being recommended for exclusion. They include 190 total stream miles, representing 13.2 percent of the total stream miles occupied by the ESU. The reduction in estimated economic impact is approximately 25.5 percent of the impact that would occur if all habitat areas were designated.

We have concluded that exclusion of any of these areas alone, or of all areas in combination, would not significantly impede conservation of the Lower Columbia River chinook ESU. The habitat areas being recommended for designation as critical habitat include approximately 1,250 stream miles occupied by this ESU. These habitat areas are well distributed through, and representative of, the ecological zones and life-history types identified by the Willamette/Lower Columbia TRT. The recommended critical habitat designation for the Lower Columbia River chinook ESU will complement recovery planning efforts aimed at conserving the geographic distribution and diversity of the 21-23 extant chinook populations in this ESU.

3. Upper Willamette River chinook salmon

The Upper Willamette River chinook ESU was listed as a threatened species in 1999 (64 FR 14308; March 24, 1999). The ESU includes all naturally spawned populations of spring-run chinook salmon in the Clackamas River and in the Willamette River, and its tributaries, above Willamette Falls, Oregon. The agency recently conducted a review to update the ESU's status, taking into account new information and considering the net contribution of artificial propagation efforts in the ESU. We have proposed that Upper Willamette River chinook salmon remain listed as threatened (69 FR 33102; June 14, 2004). Additionally, we have proposed that the listing include seven artificial propagation programs also considered part of the ESU (69 FR 33102; June 14, 2004).

There are 1,788 occupied stream miles meeting the definition of critical habitat for this ESU. These are grouped into habitat areas in 56 watersheds within the spawning range of the ESU (for ease of reference these watersheds have been organized into 10 units based on their associated subbasin). Twenty watersheds received a low rating, 17 received a medium rating, and 19 received a high rating of conservation value to the ESU (NMFS 2004a). The lower Willamette/ Columbia River corridor downstream of the spawning range was also considered to have a high conservation value. Figure A.3(a) shows a map of Upper Willamette watersheds occupied by the ESU and eligible for designation.

Recovery Planning Status

The Willamette/Lower Columbia TRT has identified seven historically demographically independent populations with a single run-type (spring-run fish) and a single ecological spawning zone (the Willamette River) (McElhany et al. 2002). The populations include: Clackamas, Molalla, North Santiam, South Santiam, Calapooia, McKenzie, and Middle Fork Willamette rivers. The TRT also noted that reports of "chinook salmon in westside tributaries have continued to the present; however it is unlikely the abundance of spawners in any of these tributaries constitutes a [demographically independent population]." Recovery planning will likely emphasize the need for a geographical distribution of viable populations across the range of the ESU (Ruckelshaus et al. 2002, McElhany et al. 2003). Recovery planners are developing subbasin assessments and specific plans for each subbasin. Draft plans are expected by the end of 2005. The Biological Team considered the TRT products in rating each watershed, but did not have the benefit of the subbasin plans. We anticipate that, as recovery planning proceeds, we

will have better information and may revise our recommendations regarding critical habitat designation.

Military and Indian Lands

There are no lands controlled by the military or designated for its use and covered by an INRMP within the spawning range of lower Columbia chinook. There are also no Indian reservations within this range.

Consideration of Economic Impacts and Recommendations for Exclusions

Table A.3 shows the estimated total and per capita local economic impacts for each of the habitat areas. Where an area contains both a connectivity corridor and tributary habitat, the table shows the impacts of designating each.

There are 20 low-value habitat areas, 11 of which contain connectivity corridors. All but three of the low-value areas exceed the Scenario 3 criteria in whole or in part (making either the entire watershed, or the tributaries only, eligible for exclusion). Not all of the low-value areas eligible for exclusion are being recommended for exclusion. Two low-value areas (the Rock Creek/Pudding River and Senecal Creek/Mill Creek watersheds) support important spawning habitat for the Mollala/Pudding demographically independent population, and are being recommended for designation as critical habitat. All of the other areas that support this population are highly degraded, received a low-value rating, and are recommended for exclusion. Exclusion of these two areas would therefore significantly impede conservation of the ESU

Of the 17 areas with a medium rating, four contain a high-value connectivity corridor and one contains a medium-value connectivity corridor. The economic impact for two of these areas (the Hills Creek Reservoir and Middle Fork Willamette/Lookout Point watersheds) exceeded the Scenario 3 exclusion criteria, however, these areas are not recommended for exclusion. The economic impacts of the tributary and corridor habitats could not be separated for the Hills Creek Reservoir watershed, due to the small size of the connectivity corridor and its location near the headwaters of the Willamette River. Therefore, we could not conclude that the tributary-only impacts exceeded the Scenario 3 criteria. The Middle Fork Willamette/Lookout Point watershed is not recommended for exclusion as it contains the only unregulated stream with chinook spawning in this area. Its exclusion would significantly impede conservation of the ESU. Three medium-value areas that do not contain a connectivity corridor for this ESU exceed the Scenario 3 criteria and are eligible for exclusion. One of these eligible areas, the Marys River watershed, is not being recommended for exclusion, however, as the Oregon Department of Fish and Wildlife has indicated this tributary provides important overwintering habitat for juvenile Upper Willamette River chinook. Given the loss of overwintering habitat along the mainstem Willamette River, tributary habitat such as that in the Marys River has become more important to chinook survival. Exclusion of this area would therefore significantly impede conservation of the ESU.

In summary, we recommend that 11 low conservation value habitat areas and two medium-value areas be proposed for exclusion in their entirety, and the tributary-only

portions of four low-value areas with high-value connectivity corridors be proposed for exclusion from designation, because the economic benefits of exclusion outweigh the benefits of designation. The map in Figure A.3(b) shows those areas being recommended for exclusion. They include 217 total stream miles, representing 12.1 percent of the total stream miles occupied by the ESU. The reduction in estimated economic impact is approximately 17.6 percent of the impact that would occur if all habitat areas were designated.

We have concluded that exclusion of any of these areas alone, or of all areas in combination, would not significantly impede conservation of the Upper Willamette River chinook ESU. The habitat areas being recommended for designation include approximately 1,571 stream miles occupied by this ESU. These habitat areas are well distributed across the geographical area occupied by the seven demographically independent populations within this ESU. The recommended critical habitat designation for the Upper Willamette River chinook ESU will complement recovery planning efforts aimed at conserving the geographic distribution and diversity of the ESU.

4. Upper Columbia River spring-run chinook salmon

The Upper Columbia River spring-run chinook ESU was listed as an endangered species in 1999 (64 FR 14308; March 24, 1999). The ESU includes all naturally spawned populations of chinook salmon in all river reaches accessible to chinook salmon in Columbia River tributaries upstream of the Rock Island Dam and downstream of Chief Joseph Dam in Washington, excluding the Okanogan River. The agency recently conducted a review to update the ESU's status, taking into account new information and considering the net contribution of artificial propagation efforts in the ESU. We have proposed that Upper Columbia River spring-run chinook salmon remain listed as endangered (69 FR 33102; June 14, 2004). Additionally, we have proposed that the listing include six artificial propagation programs also considered part of the ESU (69 FR 33102; June 14, 2004).

There are 976 occupied stream miles meeting the definition of critical habitat for this ESU. These are grouped into habitat areas in 15 watersheds within the spawning range of this ESU (for ease of reference these watersheds have been organized into four units based on their associated subbasin). Six watersheds received a medium rating and 9 received a high rating of conservation value to the ESU (NMFS 2004a). The Columbia River corridor downstream of the spawning range was also considered to have a high conservation value. Figure A.4(a) shows a map of the Upper Columbia River watersheds occupied by the ESU and eligible for designation.

Recovery Planning Status

Three demographically independent populations of naturally spawning spring-run chinook salmon are identified for this ESU: the Wenatchee, Entiat, and Methow River Basin population. Principally due to the small number of independent populations, the Interior Columbia Basin Technical Recovery Team (ICBTRT 2003) has not identified

separate major groupings for this ESU based on life-history type or ecological spawning zone. Recovery planning will likely emphasize the need for a viable geographical distribution of the three populations comprising this ESU (Ruckelshaus et al. 2002, McElhany et al. 2003). Recovery planners are developing subbasin assessments and specific plans for each subbasin. Draft plans are expected by the end of 2005. The Biological Team considered the TRT products in rating each watershed, but did not have the benefit of the subbasin plans. We anticipate that, as recovery planning proceeds, we will have better information and may revise our recommendations regarding critical habitat designation.

Military and Indian Lands

There are no lands controlled by the military or designated for its use and covered by an INRMP within the spawning range of Upper Columbia River spring-run chinook. There is one Indian reservation within the spawning range of this ESU but there are no stream miles that meet the definition of critical habitat within the boundary of the reservation (two areas are occupied but do not contain physical or biological features essential to conservation of the ESU).

Consideration of Economic Impacts and Recommendations for Exclusions

Table A.4 shows the estimated total and per capita local economic impacts for each of the habitat areas. Where an area contains both a connectivity corridor and tributary habitat, the table shows the impacts of designating each.

There are no low conservation value habitat areas associated with the Upper Columbia River spring-run chinook ESU. There are six medium-value habitat areas, each of which contains a high-value connectivity corridor. Five of these areas exceed the Scenario 3 criteria, making the tributary habitats in these watersheds eligible for exclusion. One of these is not recommended for exclusion from designation because exclusion would significantly impede the conservation of the ESU. The lower reaches of Wolf Creek and other tributaries in this watershed provide important winter juvenile rearing habitat in the Middle Methow River watershed. In addition, with the restoration of flows to Wolf Creek, spawning has been observed in this tributary.

In summary, we recommend that the tributaries of four medium conservation value habitat areas containing high-value connectivity corridors be proposed for exclusion because the economic benefits of exclusion outweigh the benefits of designation. The map in Figure A.4(b) shows those areas being recommended for exclusion. They include 50 total stream miles, representing 5.1 percent of the total stream miles occupied by the ESU. The reduction in estimated economic impact is approximately 18 percent of the impact that would occur if all habitat areas were designated.

We have concluded that exclusion of any of these areas alone, or of all areas in combination, would not significantly impede conservation of the Upper Columbia River spring-run chinook ESU. The habitat areas being recommended for designation as critical habitat include approximately 926 stream miles occupied by this ESU. These habitat areas are well distributed within and among the three demographically

independent populations identified for this ESU. The recommended critical habitat designation for the Upper Columbia River spring-run chinook ESU will complement recovery planning efforts aimed at conserving the geographic distribution and diversity of these populations.

5. Oregon Coast coho salmon

The Oregon Coast coho ESU was listed as a threatened species in 1998 (63 FR 42587; August 10, 1998). The ESU includes all naturally spawned populations of coho salmon in Oregon coastal streams south of the Columbia River and north of Cape Blanco. In September 2001, the U.S. District Court in Eugene, Oregon, in *Alsea Valley Alliance v. Evans* (161 F. Supp. 2d 1154, D. Ore. 2001; *Alsea* decision), set aside the 1998 ESA listing of Oregon Coast coho salmon, ruling that the agency had improperly excluded hatchery stocks from the listing once it had determined they were part of the same ESU. Intervenor appealed the ruling to the U.S. Ninth Circuit Court of Appeals. On February 24, 2004, the Appeals Court dismissed the appeal, and dissolved its stay of the District Court's ruling in *Alsea*, removing Oregon Coast coho from the protections of the ESA. As part of its recent status review updates, the agency proposed that Oregon Coast coho salmon be listed as threatened (69 FR 33102; June 14, 2004). Additionally, we have proposed that the listing include five artificial propagation programs also considered part of the ESU.

There are 6,665 occupied stream miles meeting the definition of critical habitat for this ESU. These are grouped into habitat areas in 80 watersheds within the spawning range of this ESU (for ease of reference these watersheds have been organized into 13 subbasins). Of the watersheds within the ESU boundaries, 10 received a low rating, 28 received a medium rating, and 42 received a high rating of conservation value to the ESU (NMFS 2004a). There are no connectivity corridors outside the spawning range of the ESU. Figure A.5(a) shows a map of Oregon Coast watersheds occupied by the ESU and eligible for designation.

Recovery Planning Status

The Oregon/Northern California Coast TRT has tentatively identified 19 “functionally” and “potentially” independent populations, and 48 additional dependent populations (P. Lawson, pers. comm.). The functionally and potentially independent populations include: the Necanicum River, Nehalem River, Tillamook Bay, Nestucca River, Salmon River, Siletz River, Yaquina River, Beaver Creek, Alsea River, Siuslaw River, Siltcoos River (lake), Tahkenitch Creek (lake), Lower Umpqua River, Upper Umpqua River, Tenmile Creek (lake), Coos Bay, Coquille River, Floras Creek, and Sixes River populations. Recovery planning will likely emphasize the need for a geographical distribution of viable populations across the range of the ESU (Ruckelshaus et al. 2002, McElhany et al. 2003). The TRT has not identified major groupings within the ESU based on life-history type or ecological spawning zone. The TRT noted that, given the dominant influence of the ocean on the Oregon Coast climate, ecological conditions are relatively uniform throughout the ESU. The Umpqua River basin is an exception, with

inland areas being drier and experiencing more extreme temperatures than the coastal areas. Ecological differences within the ESU relate to the effects of local topography on rainfall, and of local geology on vegetation composition and slope stability. Recovery planners are expected to have draft plans by the end of 2005. The Biological Team considered the TRT products in rating each watershed, but did not have the benefit of the subbasin plans. We anticipate that, as recovery planning proceeds, we will have better information and may revise our recommendations regarding critical habitat designation.

Military and Indian Lands

There are no lands controlled by the military or designated for its use and covered by an INRMP within the spawning range of Oregon Coast coho. There are four Indian reservations within the spawning range of this ESU. Within the boundaries of these reservations there are approximately 2.8 stream miles, or about 0.04 percent of the total stream miles occupied by this ESU. This is likely a high estimate, since not all of the land within reservation boundaries may be Indian land. As described previously, and in separate documents, we have determined that the benefits of excluding the habitat areas on these Indian lands outweigh the benefits of designating them.

Consideration of Economic Impacts and Recommendations for Exclusions

Table A.5 shows the estimated total and per capita local economic impacts for each of the habitat areas. Where an area contains both a connectivity corridor and tributary habitat, the table shows the impacts of designating each.

There are eight low conservation value habitat areas, none of which contain a connectivity corridor. The economic impact for all eight low-value areas exceeded the Scenario 3 criteria, making these areas eligible for exclusion. Of the 28 areas with a medium rating, four contain a high-value connectivity corridor and three contain a medium-value connectivity corridor. Five of these medium-value areas (each within the Upper Umpqua River basin) containing connectivity corridors exceeded the Scenario 3 exclusion criteria, but are not being recommended for exclusion from designation. The Upper Umpqua River Basin is ecologically unique in that it includes multiple ecoregions, and is the only Cascade drainage in the Oregon Coast coho ESU. The TRT has recently identified at least one population supported by these upper Umpqua River Basin watersheds, and historically this river basin was an important production area for the ESU. Exclusion of these medium-value areas within the Umpqua River Basin would significantly impede conservation of the ESU.

Six medium-value habitat areas that do not contain connectivity corridors also exceeded the Scenario 3 criteria making them eligible for exclusion. None of these areas is being recommended for exclusion from designation. Four of these areas are also in the Upper Umpqua River basin, and thus are important for the reasons described above. For the other two, the Cummins Creek/Tenmile Creek/Mercer Lake Frontal watershed has recently been identified as a potentially independent population by the Oregon/Northern California Coast TRT, and is the focus of important habitat restoration efforts. The Middle Coquille River watershed is one of very few watersheds supporting the Coquille population (recently identified by the TRT). The importance of this watershed to ESU

conservation is elevated by the proposed exclusion of the Lower South Fork Coquille watershed. Its exclusion would therefore significantly impede conservation of the ESU.

In summary, we recommend that eight low conservation value habitat areas be proposed for exclusion from designation because the economic benefits of exclusion outweigh the benefits of designation. The map in Figure A.5(b) shows those habitat areas being recommended for exclusion. They include 135 total stream miles, representing two percent of the total stream miles occupied by the ESU. The reduction in estimated economic impact is approximately 15 percent of the economic impact that would occur if all habitat areas were designated.

We have concluded that exclusion of any of these areas alone, or of all areas in combination, would not significantly impede conservation of the Oregon Coast coho ESU. The habitat areas being recommended for designation as critical habitat include approximately 6,527 stream miles occupied by this ESU. These habitat areas are well distributed within and among the 19 functionally and potentially independent populations identified by the TRT. The recommended critical habitat designation for the Oregon Coast coho ESU will complement recovery planning efforts aimed at conserving the geographic distribution and diversity of these populations in this ESU.

6. Hood Canal summer-run chum salmon

The Hood Canal summer-run chum salmon ESU was listed as a threatened species in 1999 (64 FR 14508; March 25, 1999). The ESU includes all naturally spawned populations of summer-run chum salmon in Hood Canal and its tributaries as well as populations in Olympic Peninsula rivers between Hood Canal and Dungeness Bay, Washington. The agency recently conducted a review to update the ESU's status, taking into account new information and considering the net contribution of artificial propagation efforts in the ESU. We have proposed that Hood Canal summer-run chum salmon remain listed as threatened (69 FR 33102; June 14, 2004). Additionally, we have proposed that the listing include eight artificial propagation programs also considered part of the ESU (69 FR 33102; June 14, 2004).

There are 88 occupied and unoccupied stream miles meeting the definition of critical habitat for this ESU. These are grouped into habitat areas in 12 watersheds within the spawning range of this ESU (for ease of reference these watersheds have been organized into four units based on their associated subbasin). There are also five nearshore marine waters within Puget Sound that meet the definition of critical habitat. Of the watersheds within the ESU boundaries, three received a medium rating, and nine received a high rating of conservation value to the ESU (NMFS 2004a). Five nearshore marine areas also received a rating of high conservation value. Figure A.6(a) shows a map of Hood Canal watersheds occupied by the ESU and eligible for designation.

Recovery Planning Status

Sixteen historical demographically independent populations of Hood Canal summer-run chum have been identified for this ESU: eight extant populations (the Union River, Lilliwaup Creek, Hamma Hamma River, Duckabush River, Dosewallips River, Big/Little Quilcene River, Snow and Salmon creeks, Jimmycomelately Creek populations), and eight extirpated or possibly extirpated populations (the Dungeness River, Big Beef Creek, Anderson Creek, Dewatto Creek, Tahuya River, Skokomish River, Finch Creek, and Chimacum Creek populations) (Ames et al. 2000). The Puget Sound TRT has identified 5 “geographic regions of diversity and correlated risk” in Puget Sound (Ruckelshaus et al. 2002). The regions are based on similarities in hydrographic, biogeographic, geologic, and catastrophic risk characteristics and where groups of populations have evolved in common (Ruckelshaus et al. 2002). The Hood Canal summer-run chum salmon ESU occupies two of these regions – the Strait of Juan de Fuca and Hood Canal. Recovery planning will likely emphasize the need for a geographical distribution of viable populations across the range of such regions in an ESU (Ruckelshaus et al. 2002, McElhany et al. 2003). Recovery planners are developing watershed plans, with drafts anticipated by June of 2005. The Biological Team considered the TRT products in rating each watershed, but did not have the benefit of the subbasin plans. We anticipate that, as recovery planning proceeds, we will have better information and may revise our recommendations regarding critical habitat designations.

Military and Indian Lands

There are no lands controlled by the military or designated for its use and covered by an INRMP within the spawning range of Hood Canal summer-run chum. There is one Indian reservation within the spawning range of this ESU. Within the boundaries of the reservation there are approximately 6.2 stream miles, or about 7 percent of the total stream miles occupied by this ESU. This is likely a high estimate, since not all of the land within reservation boundaries may be Indian lands. As described previously, and in separate documents, we have determined that the benefits of excluding the habitat areas on these Indian lands outweigh the benefits of designating them.

Consideration of Economic Impacts and Recommendations for Exclusions

Table A.6 shows the estimated total and per capita local economic impacts for each of the habitat areas. Where an area contains both a connectivity corridor and tributary habitat, the table shows the impacts of designating each.

There are no low conservation value habitat areas associated with this ESU. Of the three medium-value areas, two exceeded the Scenario 3 criteria, making these areas eligible for exclusion. One of these areas eligible for exclusion (the Dungeness River watershed), however, is being proposed for designation as critical habitat as it is one of only four watersheds occupied by Hood Canal summer-run chum in the Strait of Juan De Fuca region. Its exclusion would significantly impede conservation of the ESU.

In summary, we recommend that one medium-value habitat area be proposed for exclusion from designation because the economic benefits of exclusion outweigh the benefits of designation. The map in Figure A.6(b) shows those areas being recommended for exclusion. They include 13 total stream miles, representing 14.7 percent of the total

stream miles meeting the definition of critical habitat for this ESU. The reduction in estimated economic impact is approximately 13 percent of the impact that would occur if all habitat areas were designated. The recommended exclusions of tribal lands completely overlap the recommended exclusions because of economic impacts, so the total recommended for exclusion is 13 miles.

We have concluded that exclusion of any of these areas alone, or of all areas in combination, would not significantly impede conservation of the Hood Canal summer-run chum ESU. The habitat area being recommended for designation as critical habitat comprises approximately 75 stream miles occupied by this ESU. These habitat areas are well distributed within and among the two geographic regions of diversity and correlated risk identified by the Puget Sound TRT. The recommended critical habitat designation for the Hood Canal summer-run chum ESU will complement recovery planning efforts aimed at conserving the geographic distribution and diversity of the eight extant populations in this ESU.

7. Columbia River chum salmon

The Columbia River chum salmon ESU was listed as a threatened species in 1999 (64 FR 14508; March 25, 1999). The ESU includes all naturally spawned populations of chum salmon in the Columbia River and its tributaries in Washington and Oregon (64 FR 14508; March 25, 1999). The agency recently conducted a review to update the ESU's status, taking into account new information and considering the net contribution of artificial propagation efforts in the ESU. We have proposed that Columbia River chum salmon remain listed as threatened (69 FR 33102; June 14, 2004). Additionally, we have proposed that the listing include three artificial propagation programs also considered part of the ESU (69 FR 33102; June 14, 2004).

There are 657 occupied stream miles meeting the definition of critical habitat for this ESU. These are grouped into habitat areas in 19 watersheds within the spawning range of the ESU (for ease of reference these watersheds have been organized into six units based on their associated subbasin). Of the watersheds within the ESU boundaries, three received a medium rating, and 16 received a high rating of conservation value to the ESU (NMFS 2004a). The connectivity corridors in the watersheds outside the ESU boundaries were also considered high-value. Figure A.7(a) shows a map of Columbia River watersheds occupied by the ESU and eligible for designation.

Recovery Planning Status

The Willamette/Lower Columbia River TRT identified 16 historical demographically independent populations of chum in the Columbia River: the Youngs Bay, Grays River, Big Creek, Elochoman River, Clatskanie River, Mill Creek, Scappoose Creek, Cowlitz River fall-run and summer-run, Kalama fall-run, Salmon Creek fall-run, Lewis River fall-run, Clackamas River fall-run, Washougal River fall-run, Lower Gorge tributaries fall-run, and the Upper Gorge tributaries fall-run populations (Myers et al. 2003). All but two of these historical populations appear to have been extirpated, or nearly so. Although the

historical record for Columbia River chum salmon is limited, it is clear that chum salmon were present in most tributaries to the lower Columbia River and to some extent were present in the mainstem (Myers et al. 2003). The Columbia River chum salmon ESU inhabits three ecological zones (Coast Range, Cascade, and Columbia Gorge) and contains a single life-history type (fall run). Recovery planning will likely emphasize the need for a geographical distribution of viable populations across the range of ecological zones (Ruckelshaus et al. 2002, McElhany et al. 2003). Recovery planners are developing subbasin assessments and specific plans for each subbasin. Draft plans are expected by the end of 2004 for those areas in Washington and the end of 2005 for those areas in Oregon. The Biological Team considered the TRT products in rating each watershed, but did not have the benefit of the subbasin plans. We anticipate that, as recovery planning proceeds, we will have better information and may revise our recommendations for regarding critical habitat designation.

Military and Indian Lands

There are no lands controlled by the military or designated for its use and covered by an INRMP within the spawning range of lower Columbia chum. There are also no Indian reservations within this range.

Consideration of Economic Impacts and Recommendations for Exclusions

Table A.7 shows the estimated total and per capita local economic impacts for each of the habitat areas. Where an area contains both a connectivity corridor and tributary habitat, the table shows the impacts of designating each.

There are no low conservation value habitat areas associated with this ESU. Of the three medium-value areas, one contains a high-value connectivity corridor, and another contains a medium-value corridor. No areas containing connectivity corridors exceeded the Scenario 3 exclusion eligibility criteria. The medium-value area that does not contain a connectivity corridor exceeded the Scenario 3 criteria, making it eligible for exclusion.

In summary, we recommend that one medium-value habitat area be proposed for exclusion from designation because the economic benefits of exclusion outweigh the benefits of designation. The map in Figure A.7(b) shows the area being recommended for exclusion. It includes one stream mile, representing 0.2 percent of the total stream miles occupied by the ESU. The reduction in estimated economic impact is approximately 2.5 percent of the impact that would occur if all habitat areas were designated.

We have concluded that exclusion of any of this area would not significantly impede conservation of the Hood Canal summer-run chum ESU. The habitat area being recommended for designation as critical habitat comprises approximately 656 stream miles occupied by this ESU – nearly 100 percent of its present range. The recommended critical habitat designation for the Columbia River chum ESU will complement recovery planning efforts aimed at conserving the geographic distribution and diversity of the two extant populations in this ESU.

8. Ozette Lake sockeye salmon

The Ozette Lake sockeye salmon ESU was listed as a threatened species in 1999 (64 FR 14528; March 25, 1999). The ESU includes all naturally spawned populations of sockeye salmon in Ozette Lake and streams and tributaries flowing into Ozette Lake, Washington. The agency recently conducted a review to update the ESU's status, taking into account new information and considering the net contribution of artificial propagation efforts in the ESU. We have proposed that Ozette Lake sockeye salmon remain listed as threatened (69 FR 33102; June 14, 2004). Additionally, we have proposed that the listing include two artificial propagation programs also considered part of this ESU (69 FR 133102; June 14, 2004).

There is one subbasin within the Ozette Lake sockeye ESU, composed of a single watershed. This watershed was rated as having a high conservation value to the ESU (NMFS 2004a). Figure A.8(a) shows a map of the Ozette Lake watershed occupied by the ESU.

Recovery Planning Status

The Puget Sound TRT considers the Ozette Lake sockeye ESU to be comprised of one historical population with multiple spawning aggregations (Ruckelshaus et al. 2001, 2002). A local technical team (the Lake Ozette Steering Committee) is developing recovery strategies, but formal recovery planning is not currently underway.

Military and Indian Lands

There are no lands controlled by the military or designated for its use and covered by an INRMP within the spawning range of Ozette Lake sockeye ESU. There is one Indian reservation within the spawning range of this ESU. Within the boundaries of this reservation there are approximately 0.45 stream miles, or about one percent of the total stream miles occupied by this ESU. This is likely a high estimate, since not all of the land within reservation boundaries may be Indian lands. As described previously, and in separate documents, we have determined that the benefits of excluding the habitat areas on these Indian lands outweigh the benefits of designating them.

Consideration of Economic Impacts and Recommendations for Exclusions

Table A.8 shows the estimated total and per capita local economic impacts for each of the habitat areas. Where an area contains both a connectivity corridor and tributary habitat, the table shows the impacts of designating each.

This ESU is composed of a single watershed which was rated as having a high conservation value. Only those areas on tribal land are recommended for exclusion; no exclusions are recommended based on economic impacts.

9. Upper Columbia River *O. mykiss*

The Upper Columbia River *O. mykiss* ESU was listed an endangered species in 1997 (62 FR 43937; August 18, 1997). The ESU includes all naturally spawned populations of steelhead in streams in the Columbia River Basin upstream from the Yakima River, Washington, to the U.S.-Canada border (62 FR 43937; August 18, 1997). The agency recently conducted a review to update the ESU's status, taking into account new information, evaluating component resident rainbow trout populations, and considering the net contribution of artificial propagation efforts in the ESU. We have proposed that Upper Columbia River *O. mykiss* be listed as threatened (69 FR 33102; June 14, 2004). Additionally, we have proposed that the listing include resident populations of *O. mykiss* below impassible barriers (natural and manmade) that co-occur with anadromous populations (69 FR 33102; June 14, 2004). We have also proposed that the listing include six artificial propagation programs considered part of the ESU (69 FR 33102; June 14, 2004).

There are 1,319 occupied stream miles meeting the definition of critical habitat for this ESU. These are grouped into habitat areas in 31 watersheds within the spawning range of the ESU (for ease of reference these watersheds have been organized into 10 units based on their associated subbasin). Of the watersheds within the ESU boundaries, three received a low rating, eight received a medium rating, and 20 received a high rating of conservation value to the ESU (NMFS 2004a). The connectivity corridors in the watersheds outside the ESU boundaries were also considered high-value. Figure A.9.(a) shows a map of Upper Columbia River watersheds occupied by the ESU and eligible for designation.

Recovery Planning Status

The Interior Columbia Basin TRT (2003) did not identify separate major ecological groupings for this ESU due to the relatively small number of populations. Four populations are identified for the Upper Columbia River *O. mykiss* ESU: the Wenatchee River, Methow River, Entiat River, and Okanogan Basin population. Recovery planning will likely emphasize the need for a geographical distribution of viable populations across the range of the ESU (Ruckelshaus et al. 2002, McElhany et al. 2003, McClure 2004 [pers comm.]). Recovery planners are developing subbasin assessments and specific plans for each subbasin. Draft plans are expected by the end of 2005. The Biological Team considered the TRT products in rating each watershed, but did not have the benefit of the subbasin plans. We anticipate that, as recovery planning proceeds, we will have better information and may revise our recommendations regarding critical habitat designation.

Military and Indian Lands

There is one facility located within the range of the upper Columbia *O. mykiss* ESU controlled by the military with an INRMP, the Yakima Training Center. These military lands contain 7.2 occupied stream miles, or about 0.53 percent of the total stream miles occupied by this ESU. As described previously, and in separate documents, we have determined that the military's management of lands covered by this INRMP provides benefits to the species. The occupied stream reaches within these military lands therefore are precluded from designation pursuant to section 4(b)(1) of the ESA.

There is one Indian reservation within the spawning range of upper the Columbia *O. mykiss* ESU. Within the boundaries of the reservation there are approximately 58.8 occupied stream miles, or about 4.5 percent of the total stream miles occupied by this ESU. This is likely an overestimate of occupied stream miles on Indian lands, as not all of the land within reservation boundaries may be Indian lands. As described previously, and in separate documents, we have determined that the benefits of excluding the habitat areas on these Indian lands outweigh the benefits of designating them.

Description of Economic Impacts

Table A.9 shows the total and per capita local economic impacts for each of the habitat areas. Where an area contains both a connectivity corridor and tributary habitat, the table shows the impacts of designating each.

There are three low-value areas, one of which contains a connectivity corridor, also rated as having a low value. The economic impact for all three exceeds the Scenario 3 criteria, making these areas eligible for exclusion. Of the eight medium-value areas, six have high-value connectivity corridors and two have no connectivity corridor. Of the eight medium-value areas, six exceed the Scenario 3 criteria, making them eligible for exclusion. Not all of the medium-value areas are recommended for exclusion. Two tributary-only areas in the Okanogan are not recommended for exclusion because they are important for steelhead overwintering, given the degraded state of the mainstem Okanogan. Icicle Creek is not recommended for exclusion because it contains good quality steelhead spawning habitat in the headwaters and is a focus of current recovery efforts. Lower Crab Creek is not recommended for exclusion because it contains 24 miles of spawning habitat with significant potential use for conservation. In addition, steelhead in this area may exhibit life-history traits uniquely adapted to high temperatures. Exclusion of any of these medium-value areas will significantly impede conservation of the ESU.

We recommend that three low-value habitat areas and two medium-value habitat areas be proposed for exclusion because the economic benefits of exclusion outweigh the benefits of designation. The map in Figure A.9(b) shows those habitat areas being recommended for exclusion. They include 16 total stream miles, representing 1.2 percent of the total stream miles occupied by the ESU. The reduction in estimated economic impact is 23.3 percent of the impact that would occur if all habitat areas were designated. Combined with the excluded habitat areas on Indian lands, and the lands precluded from designation by an INRMP, the total stream miles not recommended for designation represent approximately 5.3 percent of the total stream miles occupied by this ESU.

We have concluded that exclusion of any of these areas alone, or of all areas in combination, would not significantly impede conservation of the upper Columbia River *O. mykiss* ESU. The habitat area being recommended for designation as critical habitat comprises approximately 1,247 stream miles occupied by this ESU. These habitat areas are well distributed across the geographical area occupied by the four identified populations. The recommended critical habitat designation for the upper Columbia River

O. mykiss ESU will complement recovery planning efforts aimed at conserving the geographic distribution and diversity of the four populations in this ESU.

10. Snake River Basin *O. mykiss*

The Snake River Basin *O. mykiss* ESU was listed as a threatened species in 1997 (62 FR 43937; August 18, 1997). The ESU includes all naturally spawned populations of steelhead in streams in the Snake River Basin of southeast Washington, northeast Oregon, and Idaho. The agency recently conducted a review to update the ESU's status, taking into account new information, evaluating component resident rainbow trout populations, and considering the net contribution of artificial propagation efforts in the ESU. We have proposed that Snake River Basin *O. mykiss* remain listed as threatened (69 FR 33102; June 14, 2004). Additionally, we have proposed that the listing include resident populations of *O. mykiss* below impassible barriers (natural and manmade) that co-occur with anadromous populations. Recent genetic data also suggest that native resident *O. mykiss* above Dworshak Dam on the North Fork Clearwater River are part of this ESU. We have proposed that these native resident *O. mykiss* populations above Dworshak Dam on the North Fork Clearwater River also be considered part of the Snake River Basin *O. mykiss* ESU. We have also proposed that the listing include six artificial propagation programs considered part of the ESU.

There are 7,989 occupied stream miles meeting the definition of critical habitat for this ESU. These are grouped into habitat areas in 271 watersheds within the spawning range of this ESU (for ease of reference these watersheds have been organized into 25 units based on their associated subbasin). There are 20 watersheds within the geographic boundaries of the ESU that are not occupied. Of the occupied watersheds within the ESU boundaries, 16 received a low rating, 42 received a medium rating, and 213 received a high rating of conservation value to the ESU (NMFS 2004a). The connectivity corridors in the watersheds outside the ESU boundaries were also considered high-value. Figure A.10(a) shows a map of Snake River Basin watersheds occupied by the ESU and eligible for designation.

Recovery Planning Status

The Interior Columbia Basin TRT (ICBTRT 2003) has identified 24 demographically independent populations in 5 "major groupings" in the Snake River Basin *O. mykiss* ESU: the Lower Snake group (including the Tucannon River and Asotin Creek populations); Clearwater group (including the Lower Clearwater, South Fork, Lolo Creek, Lochsa River, and Selway River populations); Grande Ronde group (including the Lower Grande Ronde, Joseph Creek, Wallowa River, and Upper Grande Ronde populations); Salmon River group (including the Little Salmon, South Fork, Secesh River, Chamberlain Creek, Big/Camas/Loon, Upper Middle Fork, Panther Creek, North Fork, Lemhi River, Pahsimeroi River, East Fork, and Upper mainstem populations); and Imnaha group (including the Imnaha River population). Despite geographic separation from other spawning areas, the TRT did not identify Hells Canyon as an independent population but noted that maintaining this area may be important for ESU viability and other recovery

goals. The groupings of populations are based on similarities in genetic distances, distances between spawning aggregates, life history, and habitat or environmental considerations. Recovery planning will likely emphasize the need for a geographical distribution of viable populations across the range of such groupings in an ESU (Ruckelshaus et al. 2002, McElhany et al. 2003, McClure 2004 [pers comm.]). Recovery planners are developing subbasin assessments and specific plans for each subbasin. Draft plans are expected by the end of 2005. The Biological Team considered the TRT products in rating each watershed, but did not have the benefit of the subbasin plans. We anticipate that, as recovery planning proceeds, we will have better information and may revise our recommendations regarding critical habitat designation.

Military and Indian Lands

There are no lands controlled by the military or designated for its use, and covered by an INRMP, within the spawning range of the Snake River Basin *O. mykiss* ESU. There is one Indian reservation within the spawning range of this ESU. Within the boundaries of this reservation there are approximately 261 stream miles, or about 3.3 percent of the total stream miles occupied by this ESU. This is likely a high estimate, since not all of the land within reservation boundaries may Indian land. As described previously, and in separate documents, we have determined that the benefits of excluding the habitat areas on these Indian lands outweigh the benefits of designating them.

Consideration of Economic Impacts and Recommendations for Exclusions

Table A.10 shows the estimated total and per capita local economic impacts for each of the habitat areas. Where an area contains both a connectivity corridor and tributary habitat, the table shows the impacts of designating each.

There are 16 low-value habitat areas, four of which contain high-value connectivity corridors. Two of the low-value areas containing connectivity corridors exceed the Scenario 3 criteria in part, making the tributary-only portions eligible for exclusion. Of the low-value areas lacking a connectivity corridor, six exceeded the Scenario 3 criteria for exclusion. Of the 42 areas with a medium rating, two contain a medium-value connectivity corridor, and 20 contain a high-value connectivity corridor. Both of the medium-value areas containing a medium-value connectivity corridor exceed the Scenario 3 criteria in whole or in part, making the entire watershed or tributary-only portions eligible for exclusion from designation. One of these areas (the Little Salmon River/Hard Creek watershed) is not recommended for exclusion. Habitat is limiting in the Little Salmon River, and this watershed maintains connectivity of rearing and migration habitats for both upstream and downstream watersheds. Exclusion of this watershed would significantly impede conservation of the ESU. Of the 20 medium-value areas with a high-value connectivity corridor, two areas exceed the Scenario 3 criteria for the exclusion of tributary habitats. Neither of these two areas (the Salmon River/Slate Creek and Yankee Fork/Jordan Creek watersheds) is recommended for exclusion from designation. The Salmon River/Slate Creek watershed includes Thompson Creek, which is a very large stream with a good amount of steelhead habitat. Historically mining activity has caused habitat degradation in this area, however, the mine is in remediation. Although the Yankee Fork/Jordan Creek watershed has experienced considerable past

degradation from mining, it presently supports significant steelhead production and provides several miles of rearing habitat. This watershed is also the site of numerous restoration efforts by the Shoshone-Bannock Tribes. We have determined that exclusion of these watersheds would impede the conservation of the ESU. Of the remaining medium-value watersheds that do not include connectivity corridors, four exceed the Scenario 3 criteria for exclusion from designation. One of these areas (the Squaw Creek watershed) is not recommended for exclusion. Squaw Creek is a very large stream with a good amount of steelhead habitat. Historically mining activity has caused habitat degradation in this area, however, the mine is in remediation. Another of these areas, Upper Sweetwater Creek provides the best spawning and rearing habitat in Lapwai Creek for A-run steelhead. Lapwai Creek is one of the few remaining watersheds still producing A-run steelhead.

In summary, we recommend that six low conservation value habitat areas and three medium-value areas be proposed for exclusion in their entirety, and the tributary-only portions of two low-value areas be proposed for exclusion, because the economic benefits of exclusion outweigh the benefits of designation. The map in Figure A.10(b) shows those areas being recommended for exclusion. Including the tribal lands recommended for exclusion, a total of approximately 110 occupied stream miles are being recommended for exclusion from designation, representing approximately 1.4 percent of the total stream miles occupied by the ESU. The reduction in estimated economic impact is approximately 2.5 percent of the impact that would occur if all habitat areas were designated.

We have concluded that exclusion of any of these areas alone, or of all areas in combination, would not significantly impede conservation of the Snake River Basin *O. mykiss* ESU. The habitat areas being recommended for designation include approximately 7,622 stream miles occupied by this ESU. These habitat areas are well distributed across the geographical area occupied by the 25 demographically independent populations within this ESU. The recommended critical habitat designation for the Snake River Basin *O. mykiss* ESU will complement recovery planning efforts aimed at conserving the geographic distribution and diversity of the ESU.

11. Middle Columbia River *O. mykiss*

The Middle Columbia River *O. mykiss* ESU was listed as a threatened species in 1999 (64 FR 14517; March 25, 1999). The ESU includes all naturally spawned populations of steelhead in streams from above the Wind River, Washington, and the Hood River, Oregon (exclusive), upstream to, and including, the Yakima River, Washington, excluding steelhead from the Snake River Basin. The agency recently conducted a review to update the ESU's status, taking into account new information, evaluating component resident rainbow trout populations, and considering the net contribution of artificial propagation efforts in the ESU. We have proposed that Middle Columbia River *O. mykiss* remain listed as threatened (69 FR 33102; June 14, 2004). Additionally, WE have proposed that the listing include resident populations of *O. mykiss* below impassible

barriers (natural and manmade) that co-occur with anadromous populations. We have also proposed that the listing include seven artificial propagation programs considered part of the ESU (69 FR 33102; June 14, 2004).

There are 6,264 occupied stream miles meeting the definition of critical habitat for this ESU. These are grouped into habitat areas in 111 watersheds within the spawning range of this ESU (for ease of reference these watersheds have been organized into 15 units based on their associated subbasins). Of the watersheds within the ESU boundaries, 11 received a low rating, 22 received a medium rating, and 78 received a high rating of conservation value to the ESU (NMFS 2004a). One watershed was of uncertain conservation value, as it is indeterminate whether the watershed is occupied. The connectivity corridors in the watersheds outside the ESU boundaries were also considered high-value. Figure A.11(a) shows a map of the Middle Columbia River watersheds occupied by the ESU and eligible for designation.

Recovery Planning Status

The Interior Columbia Basin TRT (ICBTRT 2003) has identified 16 extant demographically independent populations: the Fifteenmile Creek, Deschutes River – westside, Deschutes River – eastside, John Day River lower mainstem tributaries, South Fork John Day River, John Day River upper mainstem, Middle Fork John Day River, North Fork John Day River, Umatilla River, Walla Walla River, Touchet River, Rock Creek, Klickitat River, Toppenish and Satus Creeks, Naches River, and Yakima River upper mainstem populations. The historical White Salmon River populations was extirpated with the construction of the Condit Dam. The TRT arranged these populations into four major groups in this recovery planning area: (1) Cascades Eastern Slope Tributaries, (2) John Day River, (3) Umatilla and Walla Walla Rivers, and (4) Yakima River. A fifth unaffiliated group consists of at least the Rock Creek drainage (Washington) to the mid-Columbia River. These groupings are based on the proximity of major drainages, distances between spawning aggregations, topography, and genetic and ecological characteristics. Recovery planning will likely emphasize the need for a geographical distribution of viable populations across the range of population groupings (Ruckelshaus et al. 2002, McElhany et al. 2003). Recovery planners are developing subbasin assessments and specific plans for each subbasin. Draft plans are expected by the end of 2005. The Biological Team considered the TRT products in rating each watershed, but did not have the benefit of the subbasin plans. We anticipate that, as recovery planning proceeds, we will have better information and may revise our recommendations for the inclusion/exclusion of particular areas from the critical habitat designation.

Military and Indian Lands

There are no lands controlled by the military or designated for its use, and covered by an INRMP, within the spawning range of the Middle Columbia River *O. mykiss* ESU. There are three Indian reservations within the spawning range of this ESU. Within the boundaries of these reservations there are approximately 795.5 stream miles, or about 12.7 percent of the total stream miles occupied by this ESU. This is likely a high estimate, since not all of the land within reservation boundaries may be Indian lands. As

described previously, and in separate documents, we have determined that the benefits of excluding the habitat areas on these Indian lands outweigh the benefits of designating them.

Consideration of Economic Impacts and Recommendations for Exclusions

Table A.11 shows the estimated total and per capita local economic impacts for each of the habitat areas. Where an area contains both a connectivity corridor and tributary habitat, the table shows the impacts of designating each.

There are 11 low-value habitat areas, five of which contain connectivity corridors. Three of the low-value areas containing connectivity corridors exceed the Scenario 3 criteria in part making the tributary-only portions eligible for exclusion. Of the low-value areas lacking a connectivity corridor, three exceeded the Scenario 3 criteria. Of the 22 areas with a medium rating, 11 contain a high-value connectivity corridor. None of the medium-value areas containing a connectivity corridor exceed the Scenario 3 criteria for exclusion from designation. Two of the remaining medium-value areas that do not contain a connectivity corridor exceed the Scenario 3 exclusion criteria. One of these medium-value habitat areas (the White Salmon River watershed) is not recommended for exclusion as it is an important focus of habitat restoration efforts and its exclusion would significantly impede conservation of the ESU.

In summary, we recommend that three low conservation value habitat areas and one medium-value area be proposed for exclusion in their entirety, and the tributary-only portions of three low-value areas with high-value connectivity corridors be proposed for exclusion from designation, because the economic benefits of exclusion outweigh the benefits of designation. The map in Figure A.11(b) shows those areas being recommended for exclusion. They include 93 total stream miles, representing 1.5 percent of the total stream miles occupied by the ESU. The reduction in estimated economic impact is approximately 7.9 percent of the impact that would occur if all habitat areas were designated. Including the tribal lands recommended for exclusion, a total of 889 occupied stream miles are being recommended for exclusion from designation, representing approximately 14.2 percent of the total stream miles occupied by the ESU.

We have concluded that exclusion of any of these areas alone, or of all areas in combination, would not significantly impede conservation of the Middle Columbia River *O. mykiss* ESU. The habitat areas being recommended for designation include approximately 5,376 stream miles occupied by this ESU. These habitat areas are well distributed across the geographical area occupied by the 16 extant demographically independent populations within this ESU. The recommended critical habitat designation for the Middle Columbia River *O. mykiss* ESU will complement recovery planning efforts aimed at conserving the geographic distribution and diversity of the ESU.

12. Lower Columbia River *O. mykiss*

The Lower Columbia River *O. mykiss* ESU was listed as threatened in 1997 (62 FR43937; August 18, 1997). The ESU includes all naturally spawned populations of steelhead in streams and tributaries to the Columbia River between the Cowlitz and Wind Rivers, Washington (inclusive), and the Willamette and Hood Rivers, Oregon (inclusive). Excluded are steelhead in the upper Willamette River Basin above Willamette Falls and steelhead from the Little and Big White Salmon Rivers in Washington. We have recently conducted a review to update the ESU's status, taking into account new information, evaluating component resident rainbow trout populations, and considering the net contribution of artificial propagation efforts in the ESU. We have proposed that Lower Columbia River *O. mykiss* remain listed as threatened (69 FR 33102; June 14, 2004). Additionally, we have proposed that the listing include resident populations of *O. mykiss* below impassible barriers (natural and manmade) that co-occur with anadromous populations. We have also proposed that the listing include ten artificial propagation programs considered part of the ESU.

There are 2,656 occupied stream miles meeting the definition of critical habitat for this ESU. These are grouped into habitat areas in 41 watersheds within the spawning range of the Lower Columbia River *O. mykiss* ESU (for ease of reference, these watersheds have been organized into nine units based on their associated subbasin). The Biological Team noted that for four unoccupied watersheds, recovery planning efforts may find the habitat areas essential for the conservation of the ESU. Of the occupied watersheds within the ESU boundaries, two received a low rating, 11 received a medium rating, and 28 received a high rating of conservation value to the ESU (NMFS 2004a). The connectivity corridors in the watersheds outside the ESU boundaries were also considered high-value. Figure A.12(a) shows a map of Upper Willamette watersheds occupied by the ESU and eligible for designation.

Recovery Planning Status

The Willamette-Lower Columbia River TRT has identified 23 historical demographically independent populations of Lower Columbia River steelhead: 18 Western Cascade Range tributaries populations (the Cispus River winter-run, Tilton River winter-run, Upper Cowlitz River winter-run, Lower Cowlitz River winter-run, North Fork Toutle River winter-run, South Fork Toutle River winter-run, Coweeman River winter-run, Kalama River winter-run, Kalama River winter-run, Kalama River summer-run, North Fork Lewis River winter-run, East Fork Lewis River winter-run, North Fork Lewis River summer-run, East Fork Lewis River summer-run, Clackamas River winter-run, Salmon Creek winter-run, Sandy River winter-run, Washougal River winter-run, Washougal River summer run populations); and five Columbia River Gorge tributaries populations (the Lower Gorge tributaries winter-run, Upper Gorge tributaries winter-run, Wind River summer-run, Hood River winter-run, and Hood River summer-run populations) (Myers et al. 2003). The TRT has identified two life-history types (summer- and winter-run steelhead) and two ecological spawning zones (Cascade and Columbia Gorge) (McElhany et al. 2002). Recovery planning will likely emphasize the need for a geographical distribution of viable populations across the range of such strata in the ESU (Ruckelshaus et al. 2002, McElhany et al. 2003). Recovery planners are developing subbasin assessments and specific plans for each subbasin. Draft plans are expected for

areas in Washington by the end of 2004 and in Oregon by the end of 2005. The Biological Team considered the TRT products in rating each watershed, but did not have the benefit of the subbasin plans. We anticipate that, as recovery planning proceeds, we will have better information and may revise our recommendations regarding critical habitat designation.

Military and Indian Lands

There are no lands controlled by the military or designated for its use, and covered by an INRMP, within the spawning range of lower Columbia chinook. There are also no Indian reservations within this range.

Consideration of Economic Impacts and Recommendations for Exclusions

Table A.12 shows the total and per capita local economic impacts for each of the habitat areas. Where an area contains both a connectivity corridor and tributary habitat, the table shows the impacts of designating each.

There are two low conservation value habitat areas, one of which contains a high-value connectivity corridor. The economic impact for both low-value areas exceeds the Scenario 3 criteria, making them eligible for exclusion. Of the 11 areas with a medium rating, five contain high-value connectivity corridors. Five of the medium-value areas exceed the Scenario 3 criteria, making them eligible for exclusion. One of the medium-value areas is not recommended for exclusion. The North Fork of the Toutle River is one of only two watersheds supporting a winter-run steelhead population identified by the TRT as a “core” population. Its exclusion would significantly impede conservation of the ESU.

In summary, we recommend that two low-value habitat areas and four medium-value habitat areas be proposed for exclusion because the economic benefits of exclusion outweigh the benefits of designation. The map in Figure A.12(b) shows those habitat areas being recommended for exclusion from designation as critical habitat. They include 229 total stream miles, representing 8.6 percent of the total stream miles occupied by the ESU. The reduction in estimated economic impact is approximately 21.5 percent of the impact that would occur if all habitat areas were designated.

We have concluded that exclusion of any of these areas alone, or of all areas in combination, would not significantly impede conservation of the Lower Columbia River *O. mykiss* ESU. The habitat areas being recommended for designation include approximately 2,427 stream miles occupied by this ESU. These habitat areas are well distributed across the geographical area of the two life-history types and two ecological spawning zones identified by the TRT. The recommended critical habitat designation for the Lower Columbia River *O. mykiss* ESU will complement recovery planning efforts aimed at conserving the geographic distribution and diversity of the ESU.

13. Upper Willamette *O. mykiss*

The Upper Willamette River *O. mykiss* ESU was listed as a threatened species in 1999 (64 FR 14517; March 25, 1999). The ESU includes all naturally spawned populations of winter-run steelhead in the Willamette River, Oregon, and its tributaries upstream from Willamette Falls to the Calapooia River (inclusive). The agency recently conducted a review to update the ESU's status, taking into account new information, evaluating component resident rainbow trout populations, and considering the net contribution of artificial propagation efforts in the ESU. We have proposed that Upper Willamette River *O. mykiss* remain listed as threatened (69 FR 33102; June 14, 2004). Additionally, we have proposed that the listing include resident populations of *O. mykiss* below impassible barriers (natural and manmade) that co-occur with anadromous populations. Although there are no obvious physical barriers separating populations upstream of the Calapooia from those lower in the basin, resident *O. mykiss* in these upper basins are quite distinctive both phenotypically and genetically and are not considered part of the ESU. This ESU does not include any artificially propagated *O. mykiss* stocks that reside within the historical geographic range of the ESU. Hatchery summer steelhead occur in the Willamette Basin, but are an out-of-basin stock that is not included as part of the ESU.

There are 1,822 occupied stream miles meeting the definition of critical habitat for this ESU. These are grouped into habitat areas in 34 watersheds within the geographic boundaries of the ESU (for ease of reference these watersheds have been organized into seven units based on their associated subbasin). Sixteen habitat areas received a low rating, seven received a medium rating, and 11 received a high rating of conservation value to the ESU (NMFS 2004a). The connectivity corridors in the watersheds outside the ESU boundaries were also considered high-value. Figure A.13(a) shows a map of Upper Willamette watersheds occupied by the ESU and eligible for designation.

Recovery Planning Status

The Willamette-Lower Columbia River TRT has identified four historical demographically independent populations of Upper Willamette River steelhead: the Mollala River, North Santiam River, South Santiam River, and Calapooia River populations (Myers et al. 2003). The TRT also notes that spawning winter-run steelhead have been observed in the Westside tributaries to the Upper Willamette River, however, the Westside tributaries are not considered to have historically constituted a demographically independent population (Myers et al. 2003). The TRT has determined that the Upper Willamette River *O. mykiss* ESU populations comprise a single life-history type (winter-run fish) and ecological zone (Willamette River) (McElhany et al. 2002). Recovery planning will likely emphasize the need for a geographical distribution of viable populations across the geographical range of the four populations in this ESU (Ruckelshaus et al. 2002, McElhany et al. 2003). Recovery planners are developing subbasin assessments and specific plans for each subbasin. Draft plans are expected by the end of 2005. The Biological Team considered the TRT products in rating each watershed, but did not have the benefit of the subbasin plans. We anticipate that, as recovery planning proceeds, we will have better information and may revise our recommendations for regarding critical habitat designation.

Military and Indian Lands

There are no lands controlled by the military or designated for its use and covered by an INRMP within the spawning range of upper Willamette River *O. mykiss*. There is one Indian reservation. Within the boundaries of the reservation there are approximately 8.9 stream miles, or about 0.5 percent of the total stream miles occupied by this ESU. This is likely a high estimate, since not all of the land within reservation boundaries may be Indian lands. As described previously, and in separate documents, we have determined that the benefits of excluding the habitat areas on these Indian lands outweigh the benefits of designating them.

Consideration of Economic Impacts and Recommendations for Exclusions

Table A.13 shows the total and per capita local economic impacts for each of the habitat areas. Where an area contains both a connectivity corridor and tributary habitat, the table shows the impacts of designating each.

There are 16 low conservation value habitat areas, four of which contain high-value connectivity corridors and five of which contain medium-value connectivity corridors. The economic impact for twelve of the low-value areas exceeded the Scenario 3 criteria. Of the seven medium-value areas, two have high-value connectivity corridors. None of the medium-value areas exceed the Scenario 3 criteria.

We recommend that 12 low-value areas be proposed for exclusion, eight in their entirety and four tributary-only portions. The map in Figure A.13(b) illustrates those areas being recommended for exclusion. They include 503 stream miles, representing 28 percent of the total stream miles occupied by the ESU. The reduction in estimated economic impact is approximately 35 percent of the impact that would occur if all habitat areas were designated.

We have concluded that exclusion of any of these areas alone, or of all areas in combination, would not significantly impede conservation of the Upper Willamette River *O. mykiss* ESU. The habitat areas being recommended for designation include approximately 1,310 stream miles occupied by this ESU. These habitat areas are well distributed across the geographical area occupied by the four demographically independent populations within this ESU. The recommended critical habitat designation for the Upper Willamette River *O. mykiss* ESU will complement recovery planning efforts aimed at conserving the geographic distribution and diversity of the ESU.

CONCLUSION

The Northwest Region has identified those areas meeting the definition of critical habitat and has considered the economic impact and other relevant impact of designating each particular area. We have also balanced the coextensive benefit of designation against the coextensive benefit of exclusion and recommend exclusion of particular areas where the benefit of exclusion outweighs the benefit of designation. The following table summarizes the overall results of our recommendations, in terms of total stream and shoreline miles recommended to be proposed for designation, and total economic impact.

Table 4. Summary of total habitat miles and economic impacts of areas considered and proposed for designation as critical habitat for 13 ESUs of Pacific salmon and steelhead in the Northwest region. These estimates do not include overlapping designations or overlapping economic impacts (that is, where more than one ESU occupies a habitat area, the number of miles and the economic impacts are counted only once).

	Considered for designation	Proposed for designation
Total Stream Miles	29,107	27,553
Total Shoreline Miles	2,376	2,185
Total Economic Impact	\$264,727,857	\$223,950,126.52

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Table A.1. Puget Sound chinook ESU. Conservation-value ratings, economic impacts, and proposed exclusions for fifth-field watersheds occupied by the Puget Sound chinook Evolutionarily Significant Unit (ESU). The conservation value rating for a watershed reflects the benefit of designation for the entire watershed, or in cases where the watershed includes a connectivity corridor serving other occupied watersheds, the rating reflects the benefit of designating the tributaries only. The rating for the connectivity corridor reflects the conservation benefit of designating rearing and migration habitat. Economic impacts are reported as the total annual cost of Endangered Species Act section 7 consultations (in U.S. dollars (\$) per year), and as the per capita annual cost of consultations (in U.S. dollars (\$) per year per person). The economic impact of tributaries represents the annual total cost for a watershed less the cost associated with the connectivity corridor(s). Local economic impacts reflect the costs associated with activities geographically confined in scope, and unlikely to have regional impacts or impacts beyond the subject watershed.

Occupied Areas			Conservation Value Ratings		Annual Total, Tributary-only, and Local per capita Economic Impacts				ESA Section 4(b)(2) Consideration of Watersheds for Exclusion from Designation as Critical Habitat			
Unit/Subbasin Name	Watershed Identification Code	Watershed Name	Benefit of designating watershed	Benefit of designating connectivity corridor *	Annual Total Impact	Annual Tributary Impact	Annual Local Impact per capita	Annual Local Tributary Impact per capita	Entire Watershed Eligible for Exclusion	Tributaries-only Eligible for Exclusion	Proposed Area for Exclusion	Reduction in Economic Impact from Proposed Exclusion
STRAIT OF GEORGIA	1711000201	Bellingham Bay	L		\$813,753		\$9.53		Yes	--	Entire watershed	\$813,753
STRAIT OF GEORGIA	1711000202	Samish River	L		\$840,012		\$20.34		Yes	--	Entire watershed	\$840,012
STRAIT OF GEORGIA	1711000204	Birch Bay	L		\$572,619		\$35.94		Yes	--	Entire watershed	\$572,619
NOOKSACK	1711000401	Upper North Fork Nooksack River	H		\$694,920		\$0.00		--	--	None	--
NOOKSACK	1711000402	Middle Fork Nooksack River	M		\$215,199		\$86.68		--	--	None	--
NOOKSACK	1711000403	South Fork Nooksack River	H		\$237,191		\$59.97		--	--	None	--
NOOKSACK	1711000404	Lower North Fork Nooksack River	H	H	\$149,688	\$0	\$23.01	\$0.00	--	--	None	--
NOOKSACK	1711000405	Nooksack River	H	H	\$631,754	\$73,871	\$12.55	\$0.67	--	--	None	--
UPPER SKAGIT	1711000504	Skagit River/Gorge Lake	H		\$2,005,304		\$0.00		--	--	None	--
UPPER SKAGIT	1711000505	Skagit River/Diobsud Creek	H	H	\$216,523	\$203,200	\$8.27	\$0.00	--	--	None	--
UPPER SKAGIT	1711000506	Cascade River	H		\$476,119		\$96.41		--	--	None	--
UPPER SKAGIT	1711000507	Skagit River/Illabot Creek	H	H	\$364,769	\$311,931	\$61.37	\$12.31	--	--	None	--
UPPER SKAGIT	1711000508	Baker River	M		\$6,392,533		\$222.85		Yes	--	Entire watershed	\$6,392,533
SAUK	1711000601	Upper Sauk River	H		\$990,953		\$3,035.36		--	--	None	--
SAUK	1711000602	Upper Suiattle River	H		\$706,537		\$0.00		--	--	None	--
SAUK	1711000603	Lower Suiattle River	H	H	\$558,017	\$524,850	\$229.22	\$2.55	--	--	None	--
SAUK	1711000604	Lower Sauk River	H	H	\$383,201	\$357,916	\$12.19	\$10.22	--	--	None	--
LOWER SKAGIT	1711000701	Middle Skagit River/Finney Creek	H	H	\$714,850	\$588,273	\$30.61	\$25.49	--	--	None	--
LOWER SKAGIT	1711000702	Lower Skagit River/Nookachamps Creek	H	H	\$731,308	\$140,833	\$13.85	\$2.14	--	--	None	--
STILLAGUAMISH	1711000801	North Fork Stillaguamish River	H		\$620,053		\$13.20		--	--	None	--
STILLAGUAMISH	1711000802	South Fork Stillaguamish River	H		\$643,821		\$12.66		--	--	None	--
STILLAGUAMISH	1711000803	Lower Stillaguamish River	H	H	\$354,837	\$17,597	\$12.77	\$0.39	--	--	None	--
SKYKOMISH	1711000901	Tye and Beckler Rivers	H		\$1,038,918		\$1,122.06		--	--	None	--
SKYKOMISH	1711000902	Skykomish River Forks	H	H	\$993,494	\$886,109	\$1.33	\$0.07	--	--	None	--
SKYKOMISH	1711000903	Skykomish River/Wallace River	H	H	\$204,428	\$109,960	\$10.22	\$2.59	--	--	None	--
SKYKOMISH	1711000904	Sultan River	H		\$2,739,052		\$57.79		--	--	None	--
SKYKOMISH	1711000905	Skykomish River/Woods Creek	H	H	\$255,115	\$127,993	\$5.01	\$0.00	--	--	None	--
SNOQUALMIE	1711001003	Middle Fork Snoqualmie River	H		\$3,575,576		\$12.50		--	--	None	--
SNOQUALMIE	1711001004	Lower Snoqualmie River	H	H	\$401,483	\$111,554	\$12.83	\$3.12	--	--	None	--
SNOHOMISH	1711001101	Pilchuck River	M		\$202,805		\$4.00		--	--	None	--
SNOHOMISH	1711001102	Snohomish River	H	H	\$1,373,959	\$177,206	\$7.44	\$0.66	--	--	None	--
LAKE WASHINGTON	1711001201	Cedar River	H		\$5,022,716		\$16.13		--	--	None	--
LAKE WASHINGTON	1711001202	Lake Sammamish	M		\$1,967,701		\$18.92		Yes	--	Entire watershed	Unknown [a]
LAKE WASHINGTON	1711001203	Lake Washington	M	H	\$15,221,609	\$290,004	\$23.45	\$0.20	--	--	None	--
LAKE WASHINGTON	1711001204	Sammamish River	M	M	\$2,003,482	\$234,272	\$5.14	\$0.29	Yes	--	Entire watershed	\$2,003,482
DUWAMISH	1711001301	Upper Green River	M		\$195,944		\$0.00		--	--	None	--
DUWAMISH	1711001302	Middle Green River	H	H	\$194,614	\$124,409	\$82.81	\$49.82	--	--	None	--
DUWAMISH	1711001303	Lower Green River	H	H	\$2,580,968	\$603,535	\$6.69	\$1.32	--	--	None	--
PUYALLUP	1711001401	Upper White River	H		\$540,164		\$0.00		--	--	None	--
PUYALLUP	1711001402	Lower White River	H	H	\$1,586,441	\$384,805	\$21.88	\$3.94	--	--	None	--
PUYALLUP	1711001403	Carbon River	H		\$236,427		\$6.06		--	--	None	--
PUYALLUP	1711001404	Upper Puyallup River	H		\$2,743,897		\$22.58		--	--	None	--
PUYALLUP	1711001405	Lower Puyallup River	H	H	\$1,383,251	\$309,909	\$4.39	\$0.43	--	--	None	--
NISQUALLY	1711001502	Mashel/Ohop	H		\$250,927		\$30.88		--	--	None	--
NISQUALLY	1711001503	Lowland	H	H	\$396,834	\$197,003	\$6.01	\$3.08	--	--	None	--
DESCHUTES	1711001601	Prairie	L		\$343,269		\$131.79		Yes	--	Entire watershed	\$343,269
DESCHUTES	1711001602	Prairie	L	L	\$173,421	\$75,458	\$2.72	\$1.17	Yes	--	Entire watershed	\$173,421
SKOKOMISH	1711001701	Skokomish River	H		\$993,841		\$28.06		--	--	None	--
HOOD CANAL	1711001802	Lower West Hood Canal Frontal	L		\$109,309		\$32.93		Yes	--	Entire watershed	\$109,309
HOOD CANAL	1711001803	Hamma Hamma River	M		\$243,866		\$38.86		--	--	None	--
HOOD CANAL	1711001804	Duckabush River	H		\$91,747		\$0.00		--	--	None	--
HOOD CANAL	1711001805	Dosewallips River	H		\$137,500		\$0.00		--	--	None	--
HOOD CANAL	1711001806	Big Quilcene River	L		\$252,478		\$29.07		Yes	--	Entire watershed	\$252,478
HOOD CANAL	1711001808	West Kitsap	L		\$596,887		\$20.40		Yes	--	Entire watershed	\$596,887
KITSAP	1711001900	Kennedy/Goldsborough	L		\$675,254		\$16.61		Yes	--	Entire watershed	\$675,254
KITSAP	1711001901	Puget	L		\$2,440,663		\$10.12		Yes	--	Entire watershed	\$2,440,663
KITSAP	1711001902	Prairie	L		\$535,918		\$6.80		Yes	--	Entire watershed	\$535,918
KITSAP	1711001904	Puget Sound/East Passage	L		\$1,769,047		\$4.81		Yes	--	Entire watershed	\$1,769,047
DUNGENESS/ELWHA	1711002003	Dungeness River	--		\$409,701		\$5.34		--	--	None	--
DUNGENESS/ELWHA	1711002004	Port Angeles Harbor	M		\$499,820		\$15.53		Yes	--	Entire watershed	\$499,820
DUNGENESS/ELWHA	1711002007	Elwha River	H		\$3,336,560		\$21.51		--	--	None	--
Puget Sound chinook ESU	N01	Nearshore Marine Area	H		\$1,557,434		\$1,589.19		--	--	None	Appendix 1.

N02	Nearshore Marine Area	H	\$1,619,455	\$1,542.34	--	--	None	--
N03	Nearshore Marine Area	H	\$1,467,200	\$912.44	--	--	None	--
N04	Nearshore Marine Area	H	\$1,360	\$28.33	--	--	None	--
N05	Nearshore Marine Area	H	\$780,014	\$477.95	--	--	None	--
N06	Nearshore Marine Area	H	\$856,811	\$1,586.36	--	--	None	--
N07	Nearshore Marine Area	H	\$873,598	\$650.34	--	--	None	--
N08	Nearshore Marine Area	H	\$1,572,940	\$712.38	--	--	None	--
N09	Nearshore Marine Area	H	\$1,440,483	\$2,697.53	--	--	None	--
N10	Nearshore Marine Area	H	\$13,625	\$132.28	--	--	None	--
N11	Nearshore Marine Area	H	\$248,889	\$672.67	--	--	None	--
N12	Nearshore Marine Area	H	\$610,418	\$1,169.38	--	--	None	--
N13	Nearshore Marine Area	H	\$247,970	\$295.20	--	--	None	--
N14	Nearshore Marine Area	H	\$3,348,092	\$363.96	--	--	None	--
N15	Nearshore Marine Area	H	\$958,049	\$867.01	--	--	None	--
N16	Nearshore Marine Area	H	\$340,625	\$1,851.22	--	--	None	--
N17	Nearshore Marine Area	H	\$116,754	\$268.40	--	--	None	--
N18	Nearshore Marine Area	H	\$1,452,160	\$1,753.82	--	--	None	--
N19	Nearshore Marine Area	H	\$835,440	\$3,885.77	--	--	None	--

Maximum Economic Impact if all areas were designated as critical habitat	\$95,374,362
Total reduction in economic impact of proposed exclusions	\$18,018,464
Total economic impact of areas proposed for critical	\$77,355,898

Footnotes:

* Blanks for the conservation value of connectivity corridors indicate that a watershed does not include a rearing and migration corridor serving occupied watersheds upstream (i.e., there are no occupied upstream watersheds).

Table A.2. Lower Columbia River chinook ESU. Conservation-value ratings, economic impacts, and proposed exclusions for fifth-field watersheds occupied by the Lower Columbia River chinook Evolutionarily Significant Unit (ESU). The conservation value rating for a watershed reflects the benefit of designation for the entire watershed, or in cases where the watershed includes a connectivity corridor serving other occupied watersheds, the rating reflects the benefit of designating the tributaries only. The rating for the connectivity corridor reflects the conservation benefit of designating rearing and migration habitat. Economic impacts are reported as the total annual cost of Endangered Species Act section 7 consultations (in U.S. dollars (\$) per year), and as the per capita annual cost of consultations (in U.S. dollars (\$) per year per person). The economic impact of tributaries represents the annual total cost for a watershed less the cost associated with the connectivity corridor(s). Local economic impacts reflect the costs associated with activities geographically confined in scope, and unlikely to have regional impacts or impacts beyond the subject watershed.

Occupied Areas			Conservation Value Ratings		Annual Total, Tributary-only, and Local per capita Economic Impacts				ESA Section 4(b)(2) Consideration of Watersheds for Exclusion from Designation as Critical Habitat			
Unit/Subbasin Name	Watershed Identification Code	Watershed Name	Benefit of designating watershed	Benefit of designating connectivity corridor *	Annual Total Impact	Annual Tributary Impact	Annual Local Impact per capita	Annual Local Tributary Impact per capita	Entire Watershed Eligible for Exclusion	Tributaries-only Eligible for Exclusion	Proposed Area for Exclusion	Reduction in Economic Impact from Proposed Exclusion
MIDDLE COLUMBIA/HOOD	1707010506	East Fork Hood River	H		\$580,791		\$39.43		--	--	None	--
MIDDLE COLUMBIA/HOOD	1707010507	West Fork Hood River	H		\$291,752		\$0.00		--	--	None	--
MIDDLE COLUMBIA/HOOD	1707010508	Hood River	H	H	\$1,320,099	\$95,857	\$4.40	\$2.40	--	--	None	--
MIDDLE COLUMBIA/HOOD	1707010509	White Salmon River	H		\$2,240,843		\$1.32		--	--	None	--
MIDDLE COLUMBIA/HOOD	1707010510	Little White Salmon River	M		\$592,140		\$340.63		Yes	--	Entire watershed	\$592,140
MIDDLE COLUMBIA/HOOD	1707010511	Wind River	H		\$797,808		\$18.65		--	--	None	--
MIDDLE COLUMBIA/HOOD	1707010512	Middle Columbia/Grays Creek	M	H	\$211,237	\$197,637	\$5.14	\$3.19	--	--	None	--
MIDDLE COLUMBIA/HOOD	1707010513	Middle Columbia/Eagle Creek	H	H	\$343,609	\$338,169	\$12.27	\$10.71	--	--	None	--
LOWER COLUMBIA/SANDY	1708000101	Salmon River	H		\$417,157		\$8.89		--	--	None	--
LOWER COLUMBIA/SANDY	1708000102	Zigzag River	H		\$231,720		\$2.82		--	--	None	--
LOWER COLUMBIA/SANDY	1708000103	Upper Sandy River	H		\$181,289		\$0.00		--	--	None	--
LOWER COLUMBIA/SANDY	1708000104	Middle Sandy River	H	H	\$158,331	\$156,971	\$9.35	\$8.87	--	--	None	--
LOWER COLUMBIA/SANDY	1708000105	Bull Run River	H		\$1,903,546		\$410.45		--	--	None	--
LOWER COLUMBIA/SANDY	1708000106	Washougal River	M		\$374,003		\$7.92		Yes	--	Entire watershed	\$374,003
LOWER COLUMBIA/SANDY	1708000107	Columbia Gorge Tributaries	H	H	\$840,460	\$344,545	\$57.63	\$2.36	--	--	None	--
LOWER COLUMBIA/SANDY	1708000108	Lower Sandy River	H	H	\$178,267	\$159,309	\$2.75	\$2.07	--	--	None	--
LOWER COLUMBIA/SANDY	1708000109	Salmon Creek	L		\$3,918,463		\$13.63		Yes	--	Entire watershed	\$3,918,463
LEWIS	1708000205	East Fork Lewis River	H		\$825,934		\$16.79		--	--	None	--
LEWIS	1708000206	Lower Lewis River	H	H	\$549,672	\$145,188	\$32.31	\$0.00	--	--	None [a]	--
LOWER COLUMBIA/CLATSKANIE	1708000301	Kalama River	M		\$574,269		\$71.16		Yes	--	None [a]	--
LOWER COLUMBIA/CLATSKANIE	1708000302	Beaver Creek/Columbia River	L		\$109,429		\$6.41		Yes	--	Entire watershed	\$109,429
LOWER COLUMBIA/CLATSKANIE	1708000303	Clatskanie River	M	M	\$34,120	\$4,150	\$11.51	\$0.00	--	--	None	--
LOWER COLUMBIA/CLATSKANIE	1708000304	Germany/Abernathy	M		\$2,132,440		\$49.63		Yes	--	Entire watershed	\$2,132,440
LOWER COLUMBIA/CLATSKANIE	1708000305	Skamokawa/Elochoman	H		\$249,330		\$122.64		--	--	None	--
LOWER COLUMBIA/CLATSKANIE	1708000306	Plympton Creek	H		\$63,895		\$52.94		--	--	None	--
UPPER COWLITZ	1708000401	Headwaters Cowlitz River	H		\$431,738		\$10.95		--	--	None	--
UPPER COWLITZ	1708000402	Upper Cowlitz River	H	H	\$3,262,014	\$565,959	\$13.26	\$0.00	--	--	None	--
UPPER COWLITZ	1708000403	Cowlitz Valley Frontal	H	H	\$554,664	\$502,129	\$21.68	\$5.48	--	--	None	--
UPPER COWLITZ	1708000404	Upper Cispus River	H		\$937,266		\$0.00		--	--	None	--
UPPER COWLITZ	1708000405	Lower Cispus River	H	H	\$706,699	\$665,824	\$444.40	\$0.10	--	--	None	--
COWLITZ	1708000501	Tilton River	M		\$187,398		\$23.80		--	--	None	--
COWLITZ	1708000502	Riffe Reservoir	H	H	\$669,471	\$180,641	\$32.82	\$32.47	--	--	None	--
COWLITZ	1708000503	Jackson Prairie	M		\$592,113	\$222,305	\$81.15	\$24.90	--	--	None	--
COWLITZ	1708000504	North Fork Toutle River	M		\$364,630		\$35,341.67		Yes	--	Entire watershed	\$364,630
COWLITZ	1708000505	Green River	H	H	\$113,712	\$113,712	\$0.00	\$0.00	--	--	None	--
COWLITZ	1708000506	South Fork Toutle River	H		\$50,552		\$0.00		--	--	None	--
COWLITZ	1708000507	East Willapa	M	H	\$370,319	\$224,549	\$20.24	\$9.00	--	--	None	--
COWLITZ	1708000508	Coweeman	H	H	\$394,835	\$21,205	\$12.96	\$0.70	--	--	None	--
LOWER COLUMBIA	1708000601	Youngs River	M		\$721,466		\$57.45		Yes	--	Entire watershed	\$721,466
LOWER COLUMBIA	1708000602	Big Creek	H		\$214,077		\$19.22		--	--	None	--
GRAYS/ELOKOMAN	1708000603	Grays Bay	H		\$52,549		\$28.87		--	--	None	--
MIDDLE WILLAMETTE	1709000704	Abernethy Creek	L		\$585,557		\$2.53		Yes	--	Entire watershed	\$585,557
CLACKAMAS	1709001105	Eagle Creek	L		\$165,156		\$7.70		Yes	--	Entire watershed	\$165,156
CLACKAMAS	1709001106	Lower Clackamas River	H	H	\$1,022,304	\$306,492	\$5.08	\$4.15	--	--	None	--
LOWER WILLAMETTE	1709001201	Johnson Creek	M	H	\$597,547	\$213,111	\$1.73	\$0.38	--	--	None	--
LOWER WILLAMETTE	1709001202	Scappoose Creek	M	H	\$590,252	\$126,880	\$21.91	\$2.40	--	--	None	--
LOWER WILLAMETTE	1709001203	Columbia Slough/Willamette River	H	H	\$3,372,525	\$637,927	\$7.50	\$0.89	--	--	None	--
Lower Columbia Corridor (Sandy/Washougal to Ocean)				H								

Maximum Economic Impact if all areas were designated as critical habitat	\$35,077,449
Total reduction in economic impact of proposed exclusions	\$8,963,284
Total economic impact of areas proposed for critical habitat	\$26,114,165

Footnotes:

* Blanks for the conservation value of connectivity corridors indicate that a watershed does not include a rearing and migration corridor serving occupied watersheds upstream (i.e., there are no occupied upstream watersheds).

[a] The CHART considered the habitat areas in the Kalama River to be important because they (1) support both fall- and spring-run fish, (2) represent a substantial amount of the remaining spring-run habitat for this ESU, and (3) will likely be emphasized in recovery planning efforts for Lower Columbia River salmon." (D. Guy, NOAA Fisheries, pers. comm.).

Table A.3. Upper Willamette River chinook ESU. Conservation-value ratings, economic impacts, and proposed exclusions for fifth-field watersheds occupied by the Upper Willamette River chinook Evolutionarily Significant Unit (ESU). The conservation value rating for a watershed reflects the benefit of designation for the entire watershed, or in cases where the watershed includes a connectivity corridor serving other occupied watersheds, the rating reflects the benefit of designating the tributaries only. The rating for the connectivity corridor reflects the conservation benefit of designating rearing and migration habitat. Economic impacts are reported as the total annual cost of Endangered Species Act section 7 consultations (in U.S. dollars (\$) per year), and as the per capita annual cost of consultations (in U.S. dollars (\$) per year per person). The economic impact of tributaries represents the annual total cost for a watershed less the cost associated with the connectivity corridor(s). Local economic impacts reflect the costs associated with activities geographically confined in scope, and unlikely to have regional impacts or impacts beyond the subject watershed.

Occupied Areas			Conservation Value Ratings		Annual Total, Tributary-only, and Local per capita Economic Impacts				ESA Section 4(b)(2) Consideration of Watersheds for Exclusion from Designation as Critical Habitat			
Unit/Subbasin Name	Watershed Identification Code	Watershed Name	Benefit of designating watershed	Benefit of designating connectivity corridor *	Annual Total Impact	Annual Tributary Impact	Annual Local Impact per capita	Annual Local Tributary Impact per capita	Entire Watershed Eligible for Exclusion	Tributaries-only Eligible for Exclusion	Proposed Area for Exclusion	Reduction in Economic Impact from Proposed Exclusion
MIDDLE FORK WILLAMETTE	1709000101	Upper Middle Fork Willamette River	H		\$601,988		\$0.00		--	--	None	--
MIDDLE FORK WILLAMETTE	1709000102	Hills Creek	M		\$214,253		\$0.00		--	--	None	--
MIDDLE FORK WILLAMETTE	1709000103	Salt Creek/Willamette River	M		\$443,294		\$0.00		--	--	None	--
MIDDLE FORK WILLAMETTE	1709000104	Salmon Creek	H		\$581,092		\$96.40		Yes	--	Entire watershed	\$581,092
MIDDLE FORK WILLAMETTE	1709000105	Hills Creek Reservoir	M	H	\$544,448	\$543,088	\$9.65	\$9.07	--	Yes	None [a]	--
MIDDLE FORK WILLAMETTE	1709000106	North Fork Of Middle Fork Willamette River	H		\$888,376		\$1.89		--	--	None	--
MIDDLE FORK WILLAMETTE	1709000107	Middle Fork Willamette/Lookout Point	M	H	\$347,947	\$343,867	\$1.45	\$0.00	--	Yes	None [b]	--
MIDDLE FORK WILLAMETTE	1709000108	Little Fall Creek	M		\$50,516		\$0.00		--	--	None	--
MIDDLE FORK WILLAMETTE	1709000109	Fall Creek	H	H	\$689,640	\$689,640	\$120.21	\$120.21	--	--	None	--
MIDDLE FORK WILLAMETTE	1709000110	Lower Middle Fork Of Willamette River	M	H	\$44,478	\$40,398	\$1.52	\$0.96	--	--	None	--
COAST FORK WILLAMETTE	1709000201	Row River	L	L	\$742,247	\$739,527	\$41.93	\$40.62	Yes	--	Entire watershed	\$742,247
COAST FORK WILLAMETTE	1709000202	Mosby Creek	L		\$109,938		\$15.37		Yes	--	Entire watershed	\$109,938
COAST FORK WILLAMETTE	1709000203	Upper Coast Fork Willamette River	L		\$284,117		\$11.48		Yes	--	Entire watershed	\$284,117
COAST FORK WILLAMETTE	1709000205	Lower Coast Fork Willamette River	L	L	\$86,352	\$44,483	\$4.08	\$0.78	Yes	--	Entire watershed	\$86,352
UPPER WILLAMETTE	1709000301	Long Tom River	L		\$470,267		\$2.91		Yes	--	Entire watershed	\$470,267
UPPER WILLAMETTE	1709000302	Muddy Creek	L	H	\$624,567	\$193,628	\$3.35	\$0.58	--	Yes	Tributaries Only	\$193,628
UPPER WILLAMETTE	1709000303	Calapooia River	M		\$110,336		\$0.24		--	--	None	--
UPPER WILLAMETTE	1709000304	Oak Creek	L	H	\$214,002	\$27,524	\$3.51	\$0.00	--	--	None	--
UPPER WILLAMETTE	1709000305	Marys River	M		\$325,007		\$7.41		Yes	--	None [c]	--
UPPER WILLAMETTE	1709000306	Luckiamute River	M		\$160,430		\$18.13		--	--	None	--
MCKENZIE	1709000401	Upper McKenzie River	H	H	\$4,633,402	\$1,314,149	\$5.19	\$0.00	--	--	None	--
MCKENZIE	1709000402	Horse Creek	H		\$590,482		\$0.00		--	--	None	--
MCKENZIE	1709000403	South Fork McKenzie River	H		\$771,261		\$0.00		--	--	None	--
MCKENZIE	1709000404	Blue River	M		\$415,487		\$666.82		Yes	--	Entire watershed	\$415,487
MCKENZIE	1709000405	McKenzie River/Quartz Creek	H	H	\$128,730	\$128,730	\$0.00	\$0.00	--	--	None	--
MCKENZIE	1709000406	Mohawk River	M		\$166,052		\$0.00		--	--	None	--
MCKENZIE	1709000407	Lower McKenzie River	H	H	\$358,757	\$248,899	\$2.20	\$0.40	--	--	None	--
NORTH SANTIAM	1709000504	Middle North Santiam River	H		\$56,486		\$4.61		--	--	None	--
NORTH SANTIAM	1709000505	Little North Santiam River	H		\$290,765		\$0.00		--	--	None	--
NORTH SANTIAM	1709000506	Lower North Santiam River	M	H	\$119,919	\$29,218	\$6.93	\$1.58	--	--	None	--
SOUTH SANTIAM	1709000601	Hamilton Creek/South Santiam River	H	H	\$128,131	\$91,575	\$2.60	\$0.88	--	--	None	--
SOUTH SANTIAM	1709000602	Crabtree Creek	M		\$115,915		\$0.43		--	--	None	--
SOUTH SANTIAM	1709000603	Thomas Creek	M		\$90,510		\$3.84		--	--	None	--
SOUTH SANTIAM	1709000606	South Santiam River	H	H	\$412,878		\$52.31		--	--	None	--
SOUTH SANTIAM	1709000607	South Santiam River/Foster Reservoir	H	H	\$4,019	\$2,659	\$2.29	\$0.00	--	--	None	--
SOUTH SANTIAM	1709000608	Wiley Creek	M		\$31,478		\$20.95		--	--	None	--
MIDDLE WILLAMETTE	1709000701	Mill Creek/Willamette River	L		\$695,124	\$72,889	\$14.32	\$1.00	--	--	None	--
MIDDLE WILLAMETTE	1709000702	Rickreall Creek	L	H	\$261,628	\$235,870	\$6.35	\$5.27	--	Yes	Tributaries Only	\$235,870
MIDDLE WILLAMETTE	1709000703	Willamette River/Chehalem Creek	L	H	\$365,887	\$247,595	\$1.80	\$0.89	--	Yes	Tributaries Only	\$247,595
MIDDLE WILLAMETTE	1709000704	Abermethy Creek	L	H	\$585,557	\$196,701	\$2.53	\$1.30	--	Yes	Tributaries Only	\$196,701
YAMHILL	1709000804	Lower South Yamhill River	L		\$85,193		\$9.21		Yes	--	Entire watershed	\$85,193
YAMHILL	1709000805	Salt Creek/South Yamhill River	L		\$175,103		\$40.22		Yes	--	Entire watershed	\$175,103
YAMHILL	1709000806	North Yamhill River	L		\$276,770		\$19.60		Yes	--	Entire watershed	\$276,770
YAMHILL	1709000807	Yamhill River	L	L	\$131,653	\$94,506	\$4.07	\$2.62	Yes	--	Entire watershed	\$131,653
MOLALLA/PUDDING	1709000901	Abiqua Creek/Pudding River	L		\$773,586		\$13.75		Yes	--	Entire watershed	\$773,586
MOLALLA/PUDDING	1709000902	Butte Creek/Pudding River	L	L	\$81,165	\$64,928	\$6.80	\$4.92	--	--	None	--
MOLALLA/PUDDING	1709000903	Rock Creek/Pudding River	L		\$91,457		\$7.73		Yes	--	None [d]	--
MOLALLA/PUDDING	1709000904	Senecal Creek/Mill Creek	L	L	\$85,852	\$73,612	\$3.07	\$2.28	Yes	--	None [d]	--
MOLALLA/PUDDING	1709000905	Upper Molalla River	M		\$221,513		\$0.60		--	--	None	--
MOLALLA/PUDDING	1709000906	Lower Molalla River	M	M	\$111,254	\$107,174	\$4.62	\$4.20	--	--	None	--
CLACKAMAS	1709001101	Collawash River	H		\$575,164		\$115.20		--	--	None	--
CLACKAMAS	1709001102	Upper Clackamas River	H		\$557,390		\$0.00		--	--	None	--
CLACKAMAS	1709001103	Oak Grove Fork Clackamas River	H		\$1,187,629		\$0.00		--	--	None	--
CLACKAMAS	1709001104	Middle Clackamas River	H	H	\$2,919,200	\$765,190	\$17.44	\$0.00	--	--	None	--
CLACKAMAS	1709001105	Eagle Creek	L		\$165,156		\$7.70		Yes	--	Entire watershed	\$165,156
CLACKAMAS	1709001106	Lower Clackamas River	H	H	\$1,022,304	\$306,492	\$5.08	\$4.15	--	--	None	--
LOWER WILLAMETTE	1709001201	Johnson Creek	H		\$384,436		\$1.73		--	--	None	--
LOWER WILLAMETTE	1709001202	Scappoose Creek	H		\$463,372		\$21.91		--	--	None	--
LOWER WILLAMETTE	1709001203	Columbia Slough/Willamette River	H		\$2,734,598		\$7.50		--	--	None	--
Lower Columbia Corridor (Willamette to Ocean)			H									

Maximum Economic Impact if all areas were designated as critical habitat	\$29,798,559
Total reduction in economic impact of proposed exclusions	\$5,170,754

Total economic impact of areas proposed for critical habitat	\$24,627,805
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Footnotes:

* Blanks for the conservation value of connectivity corridors indicate that a watershed does not include a rearing and migration corridor serving occupied watersheds upstream (i.e., there are no occupied upstream watersheds).

[a] The migration corridor in this watershed is designated because of the "connectivity rule" (e.g., connectivity corridors accrue the highest conservation value of the watersheds they are within or of the upstream watersheds they serve). Given the small size of the stream, it is unlikely that the economic impacts would be avoided by excluding the tributaries.

[b] The tributary in this watershed (Lost Creek) represents the only unregulated stream with chinook spawning in this area.

[c] Oregon Department of Fish and Wildlife biologists report that the lower segment of these tributaries provide important overwintering habitat for juveniles.

[d] The Mollala/Pudding currently supports spawning for a demographically independent population.

Table A.4. Upper Columbia River spring-run chinook ESU. Conservation-value ratings, economic impacts, and proposed exclusions for fifth-field watersheds occupied by the Upper Columbia River spring-run chinook Evolutionarily Significant Unit (ESU). The conservation value rating for a watershed reflects the benefit of designation for the entire watershed, or in cases where the watershed includes a connectivity corridor serving other occupied watersheds, the rating reflects the benefit of designating the tributaries only. The rating for the connectivity corridor reflects the conservation benefit of designating rearing and migration habitat. Economic impacts are reported as the total annual cost of Endangered Species Act section 7 consultations (in U.S. dollars (\$) per year), and as the per capita annual cost of consultations (in U.S. dollars (\$) per year per person). The economic impact of tributaries represents the annual total cost for a watershed less the cost associated with the connectivity corridor(s). Local economic impacts reflect the costs associated with activities geographically confined in scope, and unlikely to have regional impacts or impacts beyond the subject watershed.

Occupied Areas			Conservation Value Ratings		Annual Total, Tributary-only, and Local per capita Economic Impacts				ESA Section 4(b)(2) Consideration of Watersheds for Exclusion from Designation as Critical Habitat			
Unit/Subbasin Name	Watershed Identification Code	Watershed Name	Benefit of designating watershed	Benefit of designating connectivity corridor *	Annual Total Impact	Annual Tributary Impact	Annual Local Impact per capita	Annual Local Tributary Impact per capita	Entire Watershed Eligible for Exclusion	Tributaries-only Eligible for Exclusion	Proposed Area for Exclusion	Reduction in Economic Impact from Proposed Exclusion
CHIEF JOSEPH	1702000503	Foster Creek							--	--	None	--
CHIEF JOSEPH	1702000504	Jordan/Tumwater							--	--	None	--
CHIEF JOSEPH	1702000505	Upper Columbia/Swamp Creek	M	H	\$375,689	\$167,874	\$45.54	\$9.30	--	--	None	--
METHOW	1702000801	Lost River	H		\$354,033		\$20.67		--	--	None	--
METHOW	1702000802	Upper Methow River	H	H	\$425,784	\$398,534	\$290.31	\$0.42	--	--	None	--
METHOW	1702000803	Upper Chewuch River	H		\$472,951		\$0.00		--	--	None	--
METHOW	1702000804	Lower Chewuch River	H	H	\$631,859	\$575,999	\$133.51	\$21.34	--	--	None	--
METHOW	1702000805	Twisp River	H		\$534,866		\$65.99		--	--	None	--
METHOW	1702000806	Middle Methow River	M	H	\$1,022,852	\$731,287	\$150.02	\$53.03	--	Yes	None[a]	--
METHOW	1702000807	Lower Methow River	M	H	\$607,640	\$487,015	\$123.85	\$29.24	--	Yes	Tributaries Only	\$487,015
UPPER COLUMBIA/ENTIAT	1702001001	Entiat River	H		\$1,389,403		\$49.91		--	--	None	--
UPPER COLUMBIA/ENTIAT	1702001002	Lake Entiat	M	H	\$2,611,595	\$741,559	\$35.57	\$6.30	--	Yes	Tributaries Only	\$741,559
UPPER COLUMBIA/ENTIAT	1702001003	Columbia River/Lynch Coulee		H	\$229,387		\$274.93		--	--	None	--
UPPER COLUMBIA/ENTIAT	1702001004	Columbia River/Sand Hollow		H	\$132,934		\$100.94		--	--	None	--
WENATCHEE	1702001101	White River	H		\$1,030,134		\$205.77		--	--	None	--
WENATCHEE	1702001102	Chiawa River	H		\$697,002		\$0.26		--	--	None	--
WENATCHEE	1702001103	Nason/Tumwater	H	H	\$800,662	\$707,589	\$78.84	\$0.00	--	--	None	--
WENATCHEE	1702001104	Icicle/Chumstick	M	H	\$1,638,779	\$1,079,279	\$112.19	\$15.60	--	Yes	Tributaries Only	\$1,079,279
WENATCHEE	1702001105	Lower Wenatchee River	M	H	\$782,854	\$680,679	\$10.93	\$1.88	--	Yes	Tributaries Only	\$680,679
UPPER COLUMBIA/PRIEST RAPIDS	1702001604	Yakima River/Hanson Creek		H	\$136,970		\$26.14		--	--	None	--
UPPER COLUMBIA/PRIEST RAPIDS	1702001605	Middle Columbia/Priest Rapids		H	\$6,800		\$23.61		--	--	None	--
UPPER COLUMBIA/PRIEST RAPIDS	1702001606	Columbia River/Zintel Canyon		H	\$350,383		\$6.21		--	--	None	--
MIDDLE COLUMBIA/LAKE WALLULA	1707010101	Upper Lake Wallula		H	\$943,445		\$33.44		--	--	None	--
MIDDLE COLUMBIA/LAKE WALLULA	1707010102	Lower Lake Wallula		H	\$4,080		\$30.30		--	--	None	--
MIDDLE COLUMBIA/LAKE WALLULA	1707010106	Upper Lake Umatilla		H	\$5,440		\$2.47		--	--	None	--
MIDDLE COLUMBIA/LAKE WALLULA	1707010109	Middle Lake Umatilla		H	\$36,429		\$12.04		--	--	None	--
MIDDLE COLUMBIA/LAKE WALLULA	1707010114	Lower Lake Umatilla		H	\$294,327		\$582.22		--	--	None	--
MIDDLE COLUMBIA/HOOD	1707010501	Upper Middle Columbia/Hood		H	\$320,406		\$312.59		--	--	None	--
MIDDLE COLUMBIA/HOOD	1707010504	Middle Columbia/Mill Creek		H	\$147,910		\$11.67		--	--	None	--
MIDDLE COLUMBIA/HOOD	1707010512	Middle Columbia/Grays Creek		H	\$13,600		\$5.14		--	--	None	--
MIDDLE COLUMBIA/HOOD	1707010513	Middle Columbia/Eagle Creek		H	\$5,440		\$12.27		--	--	None	--
LOWER COLUMBIA/SANDY	1708000107	Columbia Gorge Tributaries		H	\$495,915		\$57.63		--	--	None	--
Lower Columbia Corridor (Sandy/Washougal to Ocean)				H								

Maximum Economic Impact if all areas were designated as critical habitat	\$16,499,567
Total reduction in economic impact of proposed exclusions	\$2,988,533
Total economic impact of areas proposed for critical habitat	\$13,511,034

Footnotes:

* Blanks for the conservation value of connectivity corridors indicate that a watershed does not include a rearing and migration corridor serving occupied watersheds upstream (i.e., there are no occupied upstream watersheds).

[a] Spawning has been observed in this watershed once flows were restored to Wolf Creek. The lower reaches of Wolf Creek and other tributaries in this watershed also provide important winter juvenile rearing habitat.

Table A.5. Oregon Coast coho ESU. Conservation-value ratings, economic impacts, and proposed exclusions for fifth-field watersheds occupied by the Oregon Coast coho Evolutionarily Significant Unit (ESU). The conservation value rating for a watershed reflects the benefit of designation for the entire watershed, or in cases where the watershed includes a connectivity corridor serving other occupied watersheds, the rating reflects the benefit of designating the tributaries only. The rating for the connectivity corridor reflects the conservation benefit of designating rearing and migration habitat. Economic impacts are reported as the total annual cost of Endangered Species Act section 7 consultations (in U.S. dollars (\$) per year), and as the per capita annual cost of consultations (in U.S. dollars (\$) per year per person). The economic impact of tributaries represents the annual total cost for a watershed less the cost associated with the connectivity corridor(s). Local economic impacts reflect the costs associated with activities geographically confined in scope, and unlikely to have regional impacts or impacts beyond the subject watershed.

Occupied Areas			Conservation Value Ratings		Annual Total, Tributary-only, and Local per capita Economic Impacts				ESA Section 4(b)(2) Consideration of Watersheds for Exclusion from Designation as Critical Habitat			
Unit/Subbasin Name	Watershed Identification Code	Watershed Name	Benefit of designating watershed	Benefit of designating connectivity corridor *	Annual Total Impact	Annual Tributary Impact	Annual Local Impact per capita	Annual Local Tributary Impact per capita	Entire Watershed Eligible for Exclusion	Tributaries-only Eligible for Exclusion	Proposed Area for Exclusion	Reduction in Economic Impact from Proposed Exclusion
NECANICUM	1710020101	Necanicum River	M		\$160,913		\$9.53		--	--	None	--
NEHALEM	1710020201	Upper Nehalem River	H		\$119,318		\$20.26		--	--	None	--
NEHALEM	1710020202	Middle Nehalem River	H	H	\$12,690	\$11,330	\$19.61	\$16.44	--	--	None	--
NEHALEM	1710020203	Lower Nehalem River	H	H	\$49,277	\$35,652	\$55.62	\$35.61	--	--	None	--
NEHALEM	1710020204	Salmonberry River	L		\$696		\$0.00		--	--	None	--
NEHALEM	1710020205	North Fork Of Nehalem River	H		\$55,391		\$124.75		--	--	None	--
NEHALEM	1710020206	Lower Nehalem River/Cook Creek	H	H	\$2,836	\$1,476	\$1.34	\$0.00	--	--	None	--
WILSON/TRASK/NESTUCCA	1710020301	Little Nestucca River	M		\$115,305		\$1.82		--	--	None	--
WILSON/TRASK/NESTUCCA	1710020302	Nestucca River	H		\$658,416		\$8.45		--	--	None	--
WILSON/TRASK/NESTUCCA	1710020303	Tillamook River	H		\$31,846		\$6.90		--	--	None	--
WILSON/TRASK/NESTUCCA	1710020304	Trask River	H		\$216,774		\$21.31		--	--	None	--
WILSON/TRASK/NESTUCCA	1710020305	Wilson River	H		\$45,245		\$13.86		--	--	None	--
WILSON/TRASK/NESTUCCA	1710020306	Kilchis River	H		\$18,023		\$2.06		--	--	None	--
WILSON/TRASK/NESTUCCA	1710020307	Miami River	H		\$18,191		\$88.74		--	--	None	--
WILSON/TRASK/NESTUCCA	1710020308	Tillamook Bay	H	H	\$28,029	\$1,384	\$2.32	\$0.00	--	--	None	--
WILSON/TRASK/NESTUCCA	1710020309	Spring Creek/Sand Lake/Neskowin Creek Frontal	M		\$101,150		\$2.24		--	--	None	--
SILETZ/YAQUINA	1710020401	Upper Yaquina River	H		\$14,473		\$0.00		--	--	None	--
SILETZ/YAQUINA	1710020402	Big Elk Creek	M		\$111,214		\$0.22		--	--	None	--
SILETZ/YAQUINA	1710020403	Lower Yaquina River	H	H	\$196,593	\$157,513	\$20.78	\$16.54	--	--	None	--
SILETZ/YAQUINA	1710020405	Middle Siletz River	M		\$86		\$0.00		--	--	None	--
SILETZ/YAQUINA	1710020406	Rock Creek/Siletz River	M		\$8,678		\$0.00		--	--	None	--
SILETZ/YAQUINA	1710020407	Lower Siletz River	H	H	\$184,555	\$164,238	\$6.98	\$2.24	--	--	None	--
SILETZ/YAQUINA	1710020408	Salmon River/Siletz/Yaquina Bay	M		\$74,883		\$1.18		--	--	None	--
SILETZ/YAQUINA	1710020409	Devils Lake/Moolack Frontal	M		\$70,901		\$1.72		--	--	None	--
ALSEA	1710020501	Upper Alsea River	M		\$261,884		\$3.46		--	--	None	--
ALSEA	1710020502	Five Rivers/Lobster Creek	H		\$364,961		\$7.20		--	--	None	--
ALSEA	1710020503	Drift Creek	H		\$174,925		\$0.01		--	--	None	--
ALSEA	1710020504	Lower Alsea River	H	H	\$643,948	\$347,670	\$79.61	\$2.73	--	--	None	--
ALSEA	1710020505	Beaver Creek/Waldport Bay	H		\$63,676		\$0.47		--	--	None	--
ALSEA	1710020506	Yachats River	M		\$119,827		\$0.00		--	--	None	--
ALSEA	1710020507	Cummins Creek/Tenmile Creek/Mercer Lake Frontal	M		\$321,004		\$1.86		Yes	--	None [a]	--
ALSEA	1710020508	Big Creek/Vingie Creek	L		\$42,463		\$0.00		--	--	None	--
SIUSLAW	1710020601	Upper Siuslaw River	H	H	\$376,516	\$342,807	\$66.18	\$15.86	--	--	None	--
SIUSLAW	1710020602	Wolf Creek	M		\$98,533		\$0.00		--	--	None	--
SIUSLAW	1710020603	Wildcat Creek	M		\$83,053		\$0.00		--	--	None	--
SIUSLAW	1710020604	Lake Creek	H	H	\$225,072	\$225,072	\$12.83	\$12.83	--	--	None	--
SIUSLAW	1710020605	Deadwood Creek	H		\$179,444		\$0.00		--	--	None	--
SIUSLAW	1710020606	Indian Creek/Lake Creek	H		\$149,936		\$0.07		--	--	None	--
SIUSLAW	1710020607	North Fork Siuslaw River	H		\$188,221		\$0.00		--	--	None	--
SIUSLAW	1710020608	Lower Siuslaw River	H	H	\$328,800	\$302,450	\$2.73	\$0.00	--	--	None	--
SILTCOOS	1710020701	Wahink River/Siltcoos River/Tahkenitch Lake Frontal	H		\$458,095		\$114.98		--	--	None	--
NORTH UMPQUA	1710030106	Boulder Creek	L		\$115,024		\$0.00		Yes	--	Entire watershed	\$115,024
NORTH UMPQUA	1710030107	Middle North Umpqua	M	M	\$684,634	\$684,634	\$0.58	\$0.58	Yes	--	None [b]	--
NORTH UMPQUA	1710030108	Steamboat Creek	L		\$607,364		\$0.00		Yes	--	Entire watershed	\$607,364
NORTH UMPQUA	1710030109	Canton Creek	L		\$183,123		\$0.00		Yes	--	Entire watershed	\$183,123
NORTH UMPQUA	1710030110	Rock Creek/North Umpqua River	M		\$168,973		\$40.00		--	--	None	--
NORTH UMPQUA	1710030111	Little River	M		\$523,327		\$28.65		Yes	--	None [b]	--
NORTH UMPQUA	1710030112	Lower North Umpqua River	H	H	\$329,403	\$297,614	\$18.91	\$16.69	--	--	None	--
SOUTH UMPQUA	1710030201	Upper South Umpqua River	L		\$512,827		\$13.32		Yes	--	Entire watershed	\$512,827
SOUTH UMPQUA	1710030202	Jackson Creek	L		\$567,160		\$6.14		Yes	--	Entire watershed	\$567,160
SOUTH UMPQUA	1710030203	Middle South Umpqua River	M	M	\$520,896	\$510,294	\$0.00	\$0.00	Yes	--	None [b]	--
SOUTH UMPQUA	1710030204	Elk Creek/South Umpqua	L		\$199,819		\$10.14		Yes	--	Entire watershed	\$199,819
SOUTH UMPQUA	1710030205	South Umpqua River	M	M	\$400,262	\$396,182	\$13.68	\$11.56	Yes	--	None [b]	--
SOUTH UMPQUA	1710030207	Middle Cow Creek	M		\$333,112		\$20.59		Yes	--	None [b]	--
SOUTH UMPQUA	1710030208	West Fork Cow Creek	H		\$176,562		\$0.00		--	--	None	--
SOUTH UMPQUA	1710030209	Lower Cow Creek	M	H	\$271,109	\$264,309	\$13.93	\$10.88	--	--	None	--
SOUTH UMPQUA	1710030210	Middle South Umpqua River	M	H	\$171,751	\$158,151	\$21.58	\$19.03	--	--	None	--
SOUTH UMPQUA	1710030211	Myrtle Creek	M		\$266,585		\$18.64		--	--	None	--
SOUTH UMPQUA	1710030212	Ollala Creek/Lookingglass	M		\$315,092		\$43.78		Yes	--	None [b]	--
SOUTH UMPQUA	1710030213	Lower South Umpqua River	M	H	\$484,654	\$388,758	\$10.86	\$8.39	--	Yes	None [b]	--
UMPQUA	1710030301	Upper Umpqua River	M	H	\$453,916	\$453,916	\$37.01	\$37.01	--	Yes	None [b]	--

UMPQUA	1710030302	Calapooya Creek	H		\$115,336		\$10.24	--	--	None	--
UMPQUA	1710030303	Elk Creek	M		\$396,292		\$23.24	Yes	--	None [b]	--
UMPQUA	1710030304	Middle Umpqua River	H	H	\$199,123	\$199,123	\$104.15	--	--	None	--
UMPQUA	1710030305	Lake Creek	L		\$168,474		\$0.00	Yes	--	Entire watershed	\$168,474
UMPQUA	1710030306	Upper Smith River	H		\$334,534		\$0.00	--	--	None	--
UMPQUA	1710030307	Lower Smith River	H	H	\$509,804	\$479,652	\$63.96	--	--	None	--
UMPQUA	1710030308	Lower Umpqua River	H	H	\$202,199	\$195,399	\$17.73	--	--	None	--
COOS	1710030401	South Fork Coos	H		\$168,408		\$0.00	--	--	None	--
COOS	1710030402	Millicoma River	H		\$0		\$0.00	--	--	None	--
COOS	1710030403	Lakeside Frontal	H		\$86,312		\$13.62	--	--	None	--
COOS	1710030404	Coos Bay	H	H	\$681,941	\$277,532	\$14.02	--	--	None	--
COQUILLE	1710030501	Lower South Fork Coquille	L		\$395,653		\$0.42	Yes	--	Entire watershed	\$395,653
COQUILLE	1710030502	Middle Fork Coquille	M		\$384,179		\$2.67	Yes	--	None [c]	--
COQUILLE	1710030503	Middle Main Coquille	H	H	\$140,217	\$136,137	\$23.94	--	--	None	--
COQUILLE	1710030504	East Fork Coquille	H		\$277,077		\$0.14	--	--	None	--
COQUILLE	1710030505	North Fork Coquille	H	H	\$275,739	\$254,829	\$62.63	--	--	None	--
COQUILLE	1710030506	Lower Coquille	H	H	\$185,633	\$122,855	\$13.67	--	--	None	--
SIXES	1710030603	Sixes River	M		\$207,630		\$309.22	--	--	None	--
SIXES	1710030604	New River Frontal	H		\$56,154		\$11.11	--	--	None	--

Maximum Economic Impact if all areas were designated as critical habitat	\$18,446,139
Total reduction in economic impact of proposed exclusions	\$2,749,443
Total economic impact of areas proposed for critical habitat	\$15,696,696

Footnotes:

* Blanks for the conservation value of connectivity corridors indicate that a watershed does not include a rearing and migration corridor serving occupied watersheds upstream (i.e., there are no occupied upstream watersheds).

[a] Recent identification of "functionally" and "potentially" independent populations by the Oregon Coast/Northern California Technical Recovery Team (TRT) has underscored the importance of this area. This area is also the focus of important habitat restoration work.

[b] The Upper Umpqua River Basin is ecologically unique in that it includes multiple ecoregions, and is the only Cascade drainage in the Oregon Coast coho ESU. The TRT has recently identified at least one population supported by these upper Umpqua River Basin fifth-field watersheds. Historically, this river basin was an important production area for the ESU. The exclusion of low conservation value areas in upper watersheds increases the importance of this and other medium conservation value watersheds downstream.

[c] Very few fifth-field watersheds support the Coquille population (recently identified by the TRT). The importance of this watershed to ESU conservation is elevated by the proposed exclusion of the Lower South Fork Coquille Watershed.

Table A.6. Hood Canal summer-run chum ESU. Conservation-value ratings, economic impacts, and proposed exclusions for fifth-field watersheds occupied by the Hood Canal summer-run chum Evolutionarily Significant Unit (ESU). The conservation value rating for a watershed reflects the benefit of designation for the entire watershed, or in cases where the watershed includes a connectivity corridor serving other occupied watersheds, the rating reflects the benefit of designating the tributaries only. The rating for the connectivity corridor reflects the conservation benefit of designating rearing and migration habitat. Economic impacts are reported as the total annual cost of Endangered Species Act section 7 consultations (in U.S. dollars (\$) per year), and as the per capita annual cost of consultations (in U.S. dollars (\$) per year per person). The economic impact of tributaries represents the annual total cost for a watershed less the cost associated with the connectivity corridor(s). Local economic impacts reflect the costs associated with activities geographically confined in scope, and unlikely to have regional impacts or impacts beyond the subject watershed.

Occupied Areas			Conservation Value Ratings	Annual Total, Tributary-only, and Local per capita Economic Impacts				ESA Section 4(b)(2) Consideration of Watersheds for Exclusion from Designation as Critical Habitat				
Unit/Subbasin Name	Watershed Identification Code	Watershed Name	Benefit of designating watershed	Benefit of designating connectivity corridor *	Annual Total Impact	Annual Tributary Impact	Annual Local Impact per capita	Annual Local Tributary Impact per capita	Entire Watershed Eligible for Exclusion	Tributaries-only Eligible for Exclusion	Proposed Area for Exclusion	Reduction in Economic Impact from Proposed Exclusion
SKOKOMISH	1711001701	Skokomish River	M		\$993,841		\$28.06		Yes	--	Entire watershed	\$993,841
HOOD CANAL	1711001802	Lower West Hood Canal Frontal	H		\$109,309		\$32.93		--	--	None	--
HOOD CANAL	1711001803	Hamma Hamma River	H		\$243,866		\$38.86		--	--	None	--
HOOD CANAL	1711001804	Duckabush River	H		\$91,747		\$0.00		--	--	None	--
HOOD CANAL	1711001805	Dosewallips River	H		\$137,500		\$0.00		--	--	None	--
HOOD CANAL	1711001806	Big Quilcene River	H		\$252,478		\$29.07		--	--	None	--
HOOD CANAL	1711001807	Upper West Hood Canal Frontal	M		\$263,891		\$65.52		--	--	None	--
HOOD CANAL	1711001808	West Kitsap	H		\$596,887		\$20.40		--	--	None	--
PUGET SOUND	1711001908	Port Ludlow/Chimacum Creek	H		\$606,233		\$37.25		--	--	None	--
DUNGENESS/ELWHA	1711002001	Discovery Bay	H		\$132,665		\$16.72		--	--	None	--
DUNGENESS/ELWHA	1711002002	Sequim Bay	H		\$83,174		\$4.42		--	--	None	--
DUNGENESS/ELWHA	1711002003	Dungeness River	M		\$409,701		\$5.34		Yes	--	None [a]	--
	N15	Nearshore Marine Area	H		\$958,049		\$867.01		--	--	None	--
	N16	Nearshore Marine Area	H		\$340,625		\$1,851.22		--	--	None	--
	N17	Nearshore Marine Area	H		\$116,754		\$268.40		--	--	None	--
	N18	Nearshore Marine Area	H		\$1,452,160		\$1,753.82		--	--	None	--
	N19	Nearshore Marine Area	H		\$835,440		\$3,885.77		--	--	None	--

Maximum Economic Impact if all areas were designated as critical habitat	\$7,624,320
Total reduction in economic impact of proposed exclusions	\$993,841
Total economic impact of areas proposed for critical habitat	\$6,630,479

Footnotes:

* Blanks for the conservation value of connectivity corridors indicate that a watershed does not include a rearing and migration corridor serving occupied watersheds upstream (i.e., there are no occupied upstream watersheds).

[a] The Dungeness River watershed is one of only four watersheds occupied by Hood Canal summer-run chum in the Strait of Juan De Fuca region.

Table A.7. Columbia River chum ESU. Conservation-value ratings, economic impacts, and proposed exclusions for fifth-field watersheds occupied by the Columbia River chum Evolutionarily Significant Unit (ESU). The conservation value rating for a watershed reflects the benefit of designation for the entire watershed, or in cases where the watershed includes a connectivity corridor serving other occupied watersheds, the rating reflects the benefit of designating the tributaries only. The rating for the connectivity corridor reflects the conservation benefit of designating rearing and migration habitat. Economic impacts are reported as the total annual cost of Endangered Species Act section 7 consultations (in U.S. dollars (\$) per year), and as the per capita annual cost of consultations (in U.S. dollars (\$) per year per person). The economic impact of tributaries represents the annual total cost for a watershed less the cost associated with the connectivity corridor(s). Local economic impacts reflect the costs associated with activities geographically confined in scope, and unlikely to have regional impacts or impacts beyond the subject watershed.

Occupied Areas			Conservation Value Ratings		Annual Total, Tributary-only, and Local per capita Economic Impacts				ESA Section 4(b)(2) Consideration of Watersheds for Exclusion from Designation as Critical Habitat			
Unit/Subbasin Name	Watershed Identification Code	Watershed Name	Benefit of designating watershed	Benefit of designating connectivity corridor *	Annual Total Impact	Annual Tributary Impact	Annual Local Impact per capita	Annual Local Tributary Impact per capita	Entire Watershed Eligible for Exclusion	Tributaries-only Eligible for Exclusion	Proposed Area for Exclusion	Reduction in Economic Impact from Proposed Exclusion
MIDDLE COLUMBIA/HOOD	1707010509	White Salmon River	H		\$2,240,843		\$1.32		--	--	None	--
MIDDLE COLUMBIA/HOOD	1707010512	Middle Columbia/Grays Creek	H	H	\$211,237	\$197,637	\$5.14	\$3.19	--	--	None	--
MIDDLE COLUMBIA/HOOD	1707010513	Middle Columbia/Eagle Creek	H	H	\$343,609	\$338,169	\$12.27	\$10.71	--	--	None	--
LOWER COLUMBIA/SANDY	1708000106	Washougal River	H		\$374,003		\$7.92		--	--	None	--
LOWER COLUMBIA/SANDY	1708000107	Columbia Gorge Tributaries	H	H	\$840,460	\$344,545	\$57.63	\$2.36	--	--	None	--
LOWER COLUMBIA/SANDY	1708000109	Salmon Creek	H		\$3,918,463		\$13.63		--	--	None	--
LEWIS	1708000205	East Fork Lewis River	H		\$825,934		\$16.79		--	--	None	--
LEWIS	1708000206	Lower Lewis River	H	H	\$549,672	\$145,188	\$32.31	\$0.00	--	--	None	--
LOWER COLUMBIA/CLATSKANIE	1708000301	Kalama River	H		\$574,269		\$71.16		--	--	None	--
LOWER COLUMBIA/CLATSKANIE	1708000304	Germany/Abernathy	H		\$2,132,440		\$49.63		--	--	None	--
LOWER COLUMBIA/CLATSKANIE	1708000305	Skamokawa/Elochoman	H		\$249,330		\$122.64		--	--	None	--
COWLITZ	1708000503	Jackson Prairie	H		\$592,113		\$81.15		--	--	None	--
COWLITZ	1708000504	North Fork Toutle River	M		\$364,630		\$35,341.67		Yes	--	Entire watershed	\$364,630
COWLITZ	1708000505	Green River	M	M	\$113,712	\$113,712	\$0.00	\$0.00	--	--	None	--
COWLITZ	1708000506	South Fork Toutle River	M	H	\$50,552	\$50,552	\$0.00	\$0.00	--	--	None	--
COWLITZ	1708000507	East Willapa	H	H	\$370,319	\$224,549	\$20.24	\$9.00	--	--	None	--
COWLITZ	1708000508	Coweeman	H	H	\$394,835	\$21,205	\$12.96	\$0.70	--	--	None	--
LOWER COLUMBIA	1708000602	Big Creek	H		\$214,077		\$19.22		--	--	None	--
GRAYS/ELOKOMAN	1708000603	Grays Bay	H		\$52,549		\$28.87		--	--	None	--
Lower Columbia Corridor (Sandy/Washougal to Ocean)				H								

Maximum Economic Impact if all areas were designated as critical habitat	\$14,413,049
Total reduction in economic impact of proposed exclusions	\$364,630
Total economic impact of areas proposed for critical habitat	\$14,048,419

Footnotes:

* Blanks for the conservation value of connectivity corridors indicate that a watershed does not include a rearing and migration corridor serving occupied watersheds upstream (i.e., there are no occupied upstream watersheds).

Table A.8. Ozette Lake sockeye ESU. Conservation-value ratings, economic impacts, and proposed exclusions for fifth-field watersheds occupied by the Ozette Lake sockeye Evolutionarily Significant Unit (ESU). The conservation value rating for a watershed reflects the benefit of designation for the entire watershed, or in cases where the watershed includes a connectivity corridor serving other occupied watersheds, the rating reflects the benefit of designating the tributaries only. The rating for the connectivity corridor reflects the conservation benefit of designating rearing and migration habitat. Economic impacts are reported as the total annual cost of Endangered Species Act section 7 consultations (in U.S. dollars (\$) per year), and as the per capita annual cost of consultations (in U.S. dollars (\$) per year per person). The economic impact of tributaries represents the annual total cost for a watershed less the cost associated with the connectivity corridor(s). Local economic impacts reflect the costs associated with activities geographically confined in scope, and unlikely to have regional impacts or impacts beyond the subject watershed.

Occupied Areas			Conservation Value Ratings		Annual Total, Tributary-only, and Local per capita Economic Impacts				ESA Section 4(b)(2) Consideration of Watersheds for Exclusion from Designation as Critical Habitat			
Unit/Subbasin Name	Watershed		Benefit of designating watershed	Benefit of designating connectivity corridor *	Annual Total Impact	Annual Tributary Impact	Annual Local Impact per capita	Annual Local Tributary Impact per capita	Entire Watershed Eligible for Exclusion	Tributaries-only Eligible for Exclusion	Proposed Area for Exclusion	Reduction in Economic Impact from Proposed Exclusion
	Identification Code	Watershed Name										
HOH/QUILLAYUTE	1710010102	Ozette Lake	H		\$2,720		\$32.00		--	--	None	--

Maximum Economic Impact if all areas were designated as critical habitat	\$2,720
Total reduction in economic impact of proposed exclusions	\$0
Total economic impact of areas proposed for critical habitat	\$2,720

Footnotes:

* Blanks for the conservation value of connectivity corridors indicate that a watershed does not include a rearing and migration corridor serving occupied watersheds upstream (i.e., there are no occupied upstream watersheds).

Table A.9. Upper Columbia River *O. mykiss* ESU. Conservation-value ratings, economic impacts, and proposed exclusions for fifth-field watersheds occupied by the Upper Columbia River *Oncorhynchus mykiss* Evolutionarily Significant Unit (ESU). The conservation value rating for a watershed reflects the benefit of designation for the entire watershed, or in cases where the watershed includes a connectivity corridor serving other occupied watersheds, the rating reflects the benefit of designating the tributaries only. The rating for the connectivity corridor reflects the conservation benefit of designating rearing and migration habitat. Economic impacts are reported as the total annual cost of Endangered Species Act section 7 consultations (in U.S. dollars (\$) per year), and as the per capita annual cost of consultations (in U.S. dollars (\$) per year per person). The economic impact of tributaries represents the annual total cost for a watershed less the cost associated with the connectivity corridor(s). Local economic impacts reflect the costs associated with activities geographically confined in scope, and unlikely to have regional impacts or impacts beyond the subject watershed.

Occupied Areas			Conservation Value Ratings		Annual Total, Tributary-only, and Local per capita Economic Impacts				ESA Section 4(b)(2) Consideration of Watersheds for Exclusion from Designation as Critical Habitat			
Unit/Subbasin Name	Watershed Identification Code	Watershed Name	Benefit of designating watershed	Benefit of designating connectivity corridor *	Annual Total Impact	Annual Tributary Impact	Annual Local Impact per capita	Annual Local Tributary Impact per capita	Entire Watershed Eligible for Exclusion	Tributaries-only Eligible for Exclusion	Proposed Area for Exclusion	Reduction in Economic Impact from Proposed Exclusion
CHIEF JOSEPH	1702000503	Foster Creek	L		\$85,522		\$160.02		Yes	--	Entire watershed	\$85,522
CHIEF JOSEPH	1702000504	Jordan/Tumwater	L	L	\$86,568	\$30,708	\$33.75	\$10.92	Yes	--	Entire watershed	\$86,568
CHIEF JOSEPH	1702000505	Upper Columbia/Swamp Creek	M	H	\$375,689	\$167,874	\$45.54	\$9.30	--	--	None	--
OKANOGAN	1702000601	Upper Okanogan River	M	H	\$497,747	\$375,762	\$69.92	\$47.59	--	Yes	None [a]	--
OKANOGAN	1702000602	Okanogan River/Bonaparte Creek	M	H	\$383,308	\$326,088	\$61.96	\$44.08	--	Yes	None [a]	--
OKANOGAN	1702000603	Salmon Creek	H		\$518,725		\$205.33		--	--	None	--
OKANOGAN	1702000604	Okanogan River/Omak Creek	H	H	\$175,171	\$101,606	\$13.38	\$7.18	--	--	None	--
OKANOGAN	1702000605	Lower Okanogan River	M	H	\$530,604	\$175,479	\$155.77	\$47.11	--	--	None	--
SIMILKAMEEN	1702000704	Lower Similkameen River	H		\$77,760		\$110.55		--	--	None	--
METHOW	1702000801	Lost River	H		\$354,033		\$20.67		--	--	None	--
METHOW	1702000802	Upper Methow River	H	H	\$425,784	\$398,534	\$290.31	\$0.42	--	--	None	--
METHOW	1702000803	Upper Chewuch River	H		\$472,951		\$0.00		--	--	None	--
METHOW	1702000804	Lower Chewuch River	H	H	\$631,859	\$575,999	\$133.51	\$21.34	--	--	None	--
METHOW	1702000805	Twisp River	H		\$534,866		\$65.99		--	--	None	--
METHOW	1702000806	Middle Methow River	H	H	\$1,022,852	\$731,287	\$150.02	\$53.03	--	--	None	--
METHOW	1702000807	Lower Methow River	H	H	\$607,640	\$487,015	\$123.85	\$29.24	--	--	None	--
LAKE CHELAN	1702000903	Lower Chelan	M		\$4,671,935		\$5.17		Yes	--	Entire watershed	\$4,671,935
UPPER COLUMBIA/ENTIAT	1702001001	Entiat River	H		\$1,389,403		\$49.91		--	--	None	--
UPPER COLUMBIA/ENTIAT	1702001002	Lake Entiat	M	H	\$2,611,595	\$741,559	\$35.57	\$6.30	--	Yes	Tributaries Only	\$741,559
UPPER COLUMBIA/ENTIAT	1702001003	Columbia River/Lynch Coulee	H	H	\$229,387	\$24,292	\$274.93	\$0.00	--	--	None	--
UPPER COLUMBIA/ENTIAT	1702001004	Columbia River/Sand Hollow	H	H	\$132,934	\$35,479	\$100.94	\$0.05	--	--	None	--
WENATCHEE	1702001101	White River	H		\$1,030,134		\$205.77		--	--	None	--
WENATCHEE	1702001102	Chiawa River	H		\$697,002		\$0.26		--	--	None	--
WENATCHEE	1702001103	Nason/Tumwater	H	H	\$800,662	\$707,589	\$78.84	\$0.00	--	--	None	--
WENATCHEE	1702001104	Icicle/Chumstick	M	H	\$1,638,779	\$1,079,279	\$112.19	\$15.60	--	Yes	None [b]	--
WENATCHEE	1702001105	Lower Wenatchee River	H	H	\$782,854	\$680,679	\$10.93	\$1.88	--	--	None	--
MOSES COULEE	1702001204	RattleSnake Creek	L		\$129,438		\$167.59		Yes	--	Entire watershed	\$129,438
LOWER CRAB	1702001509	Lower Crab Creek	M		\$664,299		\$80.30		Yes	--	None [c]	--
UPPER COLUMBIA/PRIEST RAPIDS	1702001604	Yakima River/Hanson Creek	H	H	\$209,134	\$72,164	\$26.14	\$1.88	--	--	None	--
UPPER COLUMBIA/PRIEST RAPIDS	1702001605	Middle Columbia/Priest Rapids	H	H	\$23,173	\$16,373	\$23.61	\$14.39	--	--	None	--
UPPER COLUMBIA/PRIEST RAPIDS	1702001606	Columbia River/Zintel Canyon	H		\$499,939	\$149,555	\$6.21	\$1.98	--	--	None	--
MIDDLE COLUMBIA/LAKE WALLULA	1707010101	Upper Lake Wallula	H		\$943,445		\$33.44		--	--	None	--
MIDDLE COLUMBIA/LAKE WALLULA	1707010102	Lower Lake Wallula	H		\$4,080		\$30.30		--	--	None	--
MIDDLE COLUMBIA/LAKE WALLULA	1707010106	Upper Lake Umatilla	H		\$5,440		\$2.47		--	--	None	--
MIDDLE COLUMBIA/LAKE WALLULA	1707010109	Middle Lake Umatilla	H		\$36,429		\$12.04		--	--	None	--
MIDDLE COLUMBIA/LAKE WALLULA	1707010114	Lower Lake Umatilla	H		\$294,327		\$582.22		--	--	None	--
MIDDLE COLUMBIA/HOOD	1707010501	Upper Middle Columbia/Hood	H		\$320,406		\$312.59		--	--	None	--
MIDDLE COLUMBIA/HOOD	1707010504	Middle Columbia/Mill Creek	H		\$147,910		\$11.67		--	--	None	--
MIDDLE COLUMBIA/HOOD	1707010512	Middle Columbia/Grays Creek	H		\$13,600		\$5.14		--	--	None	--
MIDDLE COLUMBIA/HOOD	1707010513	Middle Columbia/Eagle Creek	H		\$5,440		\$12.27		--	--	None	--
LOWER COLUMBIA/SANDY	1708000107	Columbia Gorge Tributaries	H		\$495,915		\$57.63		--	--	None	--
Lower Columbia Corridor (Sandy/Washougal to Ocean)				H								

Maximum Economic Impact if all areas were designated as critical habitat	\$24,558,737
Total reduction in economic impact of proposed exclusions	\$5,715,023
Total economic impact of areas proposed for critical habitat	\$18,843,714

Footnotes:

* Blanks for the conservation value of connectivity corridors indicate that a watershed does not include a rearing and migration corridor serving occupied watersheds upstream (i.e., there are no occupied upstream watersheds).

[a] Listed steelhead cannot rely on habitat in the mainstem Okanogan year-round due to degraded conditions. These degraded conditions make tributary habitats especially important to support juvenile rearing. This area of the Okanogan provides important tributary rearing habitat for juveniles from all upstream areas.

[b] Icicle creek has good steelhead spawning habitat in the headwaters and is an important focus of current recovery efforts.

[c] This watershed contains 24 miles of spawning habitat with significant potential use for conservation and recovery. *O. mykiss* in this area may also exhibit life-history traits uniquely adapted to high temperatures.

Table A.10. Snake River Basin O. mykiss ESU. Conservation-value ratings, economic impacts, and proposed exclusions for fifth-field watersheds occupied by the Snake River Basin *Oncorhynchus mykiss* Evolutionarily Significant Unit (ESU). The conservation value rating for a watershed reflects the benefit of designation for the entire watershed, or in cases where the watershed includes a connectivity corridor serving other occupied watersheds, the rating reflects the benefit of designating the tributaries only. The rating for the connectivity corridor reflects the conservation benefit of designating rearing and migration habitat. Economic impacts are reported as the total annual cost of Endangered Species Act section 7 consultations (in U.S. dollars (\$) per year), and as the per capita annual cost of consultations (in U.S. dollars (\$) per year per person). The economic impact of tributaries represents the annual total cost for a watershed less the cost associated with the connectivity corridor(s). Local economic impacts reflect the costs associated with activities geographically confined in scope, and unlikely to have regional impacts or impacts beyond the subject watershed.

Occupied Areas			Conservation Value Ratings		Annual Total, Tributary-only, and Local per capita Economic Impacts				ESA Section 4(b)(2) Consideration of Watersheds for Exclusion from Designation as Critical Habitat			
			Benefit of designating watershed	Benefit of designating connectivity corridor *	Annual Total Impact	Annual Tributary Impact	Annual Local Impact per capita	Annual Local Tributary Impact per capita	Entire Watershed Eligible for Exclusion	Tributaries-only Eligible for Exclusion	Proposed Area for Exclusion	Reduction in Economic Impact from Proposed Exclusion
Unit/Subbasin Name	Watershed Identification Code	Watershed Name										
UPPER COLUMBIA/PRIEST RAPIDS	1702001606	Columbia River/Zintel Canyon		H	\$499,939		\$6.21		--	--	None	--
HELLS CANYON	1706010101	Snake River/Granite Creek	H		\$391,997		\$0.00		--	--	None	--
HELLS CANYON	1706010102	Snake River/Getta Creek	H	H	\$299,745	\$299,745	\$0.00	\$0.00	--	--	None	--
HELLS CANYON	1706010104	Snake River/Divide Creek	H	H	\$118,115	\$118,115	\$0.00	\$0.00	--	--	None	--
IMNAHA RIVER	1706010201	Upper Imnaha River	H		\$320,118		\$330.30		--	--	None	--
IMNAHA RIVER	1706010202	Middle Imnaha River	H	H	\$244,573	\$244,573	\$0.00	\$0.00	--	--	None	--
IMNAHA RIVER	1706010203	Big Sheep Creek	H		\$237,016		\$0.00		--	--	None	--
IMNAHA RIVER	1706010204	Little Sheep Creek	H	H	\$120,798	\$120,798	\$0.09	\$0.09	--	--	None	--
IMNAHA RIVER	1706010205	Lower Imnaha River	H	H	\$396,676	\$396,676	\$0.00	\$0.00	--	--	None	--
LOWER SNAKE/ASOTIN	1706010301	Snake River/Rogersburg	H	H	\$799,758	\$142,958	\$328,402.30	\$2.30	--	--	None	--
LOWER SNAKE/ASOTIN	1706010302	Asotin River	H		\$373,533		\$0.00		--	--	None	--
LOWER SNAKE/ASOTIN	1706010303	Snake River/Captain John Creek	H	H	\$1,181,103	\$32,403	\$37.48	\$0.34	--	--	None	--
UPPER GRANDE RONDE RIVER	1706010401	Upper Grande Ronde River	H		\$390,207		\$4.32		--	--	None	--
UPPER GRANDE RONDE RIVER	1706010402	Meadow Creek	H		\$388,442		\$3,656.03		--	--	None	--
UPPER GRANDE RONDE RIVER	1706010403	Grande Ronde River/Beaver Creek	H	H	\$222,922	\$222,922	\$163.68	\$153.66	--	--	None	--
UPPER GRANDE RONDE RIVER	1706010404	Grande Ronde River/Five Points Creek	H	H	\$125,314	\$125,314	\$0.00	\$0.00	--	--	None	--
UPPER GRANDE RONDE RIVER	1706010405	Catherine Creek	H		\$174,232		\$9.73		--	--	None	--
UPPER GRANDE RONDE RIVER	1706010406	Ladd Creek	M	H	\$69,119	\$51,521	\$2.11	\$0.79	--	--	None	--
UPPER GRANDE RONDE RIVER	1706010407	Grande Ronde River/Mill Creek	M	H	\$117,227	\$106,624	\$22.81	\$22.39	--	--	None	--
UPPER GRANDE RONDE RIVER	1706010408	Phillips Creek/Willow Creek	H		\$70,447		\$0.00		--	--	None	--
UPPER GRANDE RONDE RIVER	1706010409	Grande Ronde River/Indian Creek	H	H	\$135,246	\$106,454	\$44.31	\$23.85	--	--	None	--
UPPER GRANDE RONDE RIVER	1706010410	Lookingglass Creek	H		\$300,997		\$1,074.52		--	--	None	--
UPPER GRANDE RONDE RIVER	1706010411	Grande Ronde River/Cabin Creek	H	H	\$189,727	\$153,298	\$16.53	\$0.00	--	--	None	--
WALLOWA RIVER	1706010501	Upper Wallowa River	H		\$212,491		\$3.45		--	--	None	--
WALLOWA RIVER	1706010502	Lostine River	H		\$176,389		\$138.29		--	--	None	--
WALLOWA RIVER	1706010503	Middle Wallowa River	M	H	\$4,188	\$2,828	\$0.97	\$0.00	--	--	None	--
WALLOWA RIVER	1706010504	Bear Creek	H		\$132,070		\$66.27		--	--	None	--
WALLOWA RIVER	1706010505	Minam River	H		\$452,694		\$0.00		--	--	None	--
WALLOWA RIVER	1706010506	Lower Wallowa River	H	H	\$46,507	\$45,147	\$5.31	\$0.00	--	--	None	--
LOWER GRANDE RONDE	1706010601	Grande Ronde River/Rondowa	H	H	\$288,764	\$288,764	\$0.48	\$0.48	--	--	None	--
LOWER GRANDE RONDE	1706010602	Grande Ronde River/Mud Creek	H	H	\$202,650	\$202,650	\$252.44	\$252.44	--	--	None	--
LOWER GRANDE RONDE	1706010603	Wenaha River	H		\$1,077,827		\$0.97		--	--	None	--
LOWER GRANDE RONDE	1706010604	Chesnimnus Creek	H		\$210,877		\$0.00		--	--	None	--
LOWER GRANDE RONDE	1706010605	Upper Joseph Creek	H	H	\$195,766	\$185,164	\$0.31	\$0.31	--	--	None	--
LOWER GRANDE RONDE	1706010606	Lower Joseph Creek	H	H	\$194,733	\$194,733	\$1.54	\$1.54	--	--	None	--
LOWER GRANDE RONDE	1706010607	Lower Grande Ronde River/Menatchee Creek	H	H	\$181,029	\$181,029	\$46.50	\$46.50	--	--	None	--
LOWER SNAKE/TUCANNON	1706010701	Alpowa Creek	M		\$2,187		\$7.27		--	--	None	--
LOWER SNAKE/TUCANNON	1706010702	Snake River/Steptoe Canyon	L	H	\$467,677	\$752	\$42.90	\$0.00	--	--	None	--
LOWER SNAKE/TUCANNON	1706010703	Deadman Creek	L		\$0		\$0.00		--	--	None	--
LOWER SNAKE/TUCANNON	1706010704	Flat Creek	L		\$3,821		\$18.80		--	--	None	--
LOWER SNAKE/TUCANNON	1706010705	Pataha Creek	L		\$73,308		\$0.00		Yes	--	Entire watershed	\$73,308
LOWER SNAKE/TUCANNON	1706010706	Upper Tucannon River	H		\$415,177		\$93.48		--	--	None	--
LOWER SNAKE/TUCANNON	1706010707	Lower Tucannon River	H	H	\$1,360	\$0	\$7.56	\$0.00	--	--	None	--
LOWER SNAKE/TUCANNON	1706010708	Snake River/Penawawa Creek	M	H	\$96,568	\$13,458	\$229.59	\$0.00	--	--	None	--
PALOUSE RIVER	1706010808	Lower Palouse River	L		\$4,056		\$2.35		--	--	None	--
LOWER SNAKE RIVER	1706011001	Snake River/Walker Creek	H		\$97,596		\$474.52		--	--	None	--
LOWER SNAKE RIVER	1706011003	Snake River/Mc Coy Creek	H		\$124,611		\$97.32		--	--	None	--
LOWER SNAKE RIVER	1706011004	Mouth Of Snake River	H		\$104,926		\$25.44		--	--	None	--
UPPER SALMON	1706020101	Salmon River/Challis	H	H	\$268,647	\$75,647	\$198.60	\$0.04	--	--	None	--
UPPER SALMON	1706020104	Salmon River/Bayhorse Creek	H	H	\$129,076	\$96,376	\$163.71	\$0.21	--	--	None	--
UPPER SALMON	1706020105	East Fork Salmon River/McDonald Creek	H	H	\$291,126	\$62,226	\$2,044.07	\$0.32	--	--	None	--
UPPER SALMON	1706020107	Road Creek	L		\$74,750		\$2,187.26		Yes	--	Entire watershed	\$74,750
UPPER SALMON	1706020108	Herd Creek	H		\$177,754		\$29,083.82		--	--	None	--
UPPER SALMON	1706020109	East Fork Salmon River/Big Boulder Creek	H	H	\$168,099	\$59,099	\$12,114.18	\$3.07	--	--	None	--
UPPER SALMON	1706020110	Upper East Fork Salmon River	H		\$100,563		\$0.00		--	--	None	--
UPPER SALMON	1706020111	Germania Creek	H		\$40,447		\$0.00		--	--	None	--
UPPER SALMON	1706020112	Salmon River/Kinnikinic Creek	M	H	\$82,050	\$49,350	\$962.77	\$236.10	--	--	None	--
UPPER SALMON	1706020113	Salmon River/Slate Creek	M	H	\$361,180	\$154,380	\$3,211.89	\$299.21	--	Yes	None [a]	--
UPPER SALMON	1706020114	Warm Springs Creek	H		\$557,756		\$49,261.35		--	--	None	--
UPPER SALMON	1706020115	Salmon River/Big Casino Creek	H	H	\$229,962	\$71,262	\$6,613.03	\$0.53	--	--	None	--
UPPER SALMON	1706020117	Salmon River/Fisher Creek	H	H	\$132,016	\$77,516	\$2,387.62	\$784.68	--	--	None	--
UPPER SALMON	1706020118	Salmon River/Fourth of July Creek	H	H	\$105,822	\$40,422	\$0.00	\$0.00	--	--	None	--
UPPER SALMON	1706020119	Upper Salmon River	H		\$107,471		\$1,212.22		--	--	None	--
UPPER SALMON	1706020120	Alturas Lake Creek	H		\$151,439		\$0.00		--	--	None	--
UPPER SALMON	1706020121	Redfish Lake Creek	H		\$33,382		\$0.00		--	--	None	--

UPPER SALMON	1706020122	Valley Creek/Iron Creek	H	H	\$102,473	\$41,275	\$446.80	\$0.10	--	--	None	--
UPPER SALMON	1706020123	Upper Valley Creek	H		\$67,566		\$0.00		--	--	None	--
UPPER SALMON	1706020124	Basin Creek	H		\$63,688		\$4,361.64		--	--	None	--
UPPER SALMON	1706020125	Yankee Fork/Jordan Creek	M	H	\$433,003	\$389,403	\$0.00	\$0.00	--	Yes	None [b]	--
UPPER SALMON	1706020126	West Fork Yankee Fork	H		\$45,849		\$0.00		--	--	None	--
UPPER SALMON	1706020127	Upper Yankee Fork	H		\$34,897		\$0.00		--	--	None	--
UPPER SALMON	1706020128	Squaw Creek	M		\$282,604		\$4,282.43		Yes	--	None [c]	--
UPPER SALMON	1706020129	Garden Creek	M		\$110,155		\$120.79		--	--	None	--
UPPER SALMON	1706020130	Challis Creek/Mill Creek	M		\$51,710		\$0.28		--	--	None	--
UPPER SALMON	1706020132	Morgan Creek	H		\$105,769		\$2,730.84		--	--	None	--
PAHSIMEROI	1706020201	Lower Pahsimeroi River	H	H	\$98,549	\$87,649	\$67.17	\$0.30	--	--	None	--
PAHSIMEROI	1706020202	Pahsimeroi River/Falls Creek	M	M	\$128,041	\$128,041	\$0.99	\$0.99	Yes	--	Entire watershed	\$128,041
PAHSIMEROI	1706020203	Paterson Creek	M		\$39,691		\$1.02		--	--	None	--
MIDDLE SALMON-PANTHER	1706020301	Salmon River/Colson Creek	H	H	\$95,203	\$40,703	\$7,785.71	\$0.00	--	--	None	--
MIDDLE SALMON-PANTHER	1706020302	Owl Creek	M		\$41,009		\$0.00		--	--	None	--
MIDDLE SALMON-PANTHER	1706020303	Salmon River/Pine Creek	H	H	\$125,916	\$104,116	\$2,181.13	\$1.13	--	--	None	--
MIDDLE SALMON-PANTHER	1706020304	Indian Creek	H		\$102,985		\$20,203.27		--	--	None	--
MIDDLE SALMON-PANTHER	1706020305	Salmon River/Moose Creek	H	H	\$244,557	\$113,757	\$688.69	\$0.27	--	--	None	--
MIDDLE SALMON-PANTHER	1706020306	North Fork Salmon River	H		\$173,962		\$0.23		--	--	None	--
MIDDLE SALMON-PANTHER	1706020307	Salmon River/Tower Creek	H	H	\$49,058	\$38,456	\$0.05	\$0.05	--	--	None	--
MIDDLE SALMON-PANTHER	1706020308	Carmen Creek	H		\$56,902		\$0.14		--	--	None	--
MIDDLE SALMON-PANTHER	1706020309	Salmon River/Jesse Creek	H	H	\$82,339	\$82,339	\$9.49	\$9.49	--	--	None	--
MIDDLE SALMON-PANTHER	1706020310	Salmon River/Williams Creek	M	H	\$59,261		\$0.07		--	--	None	--
MIDDLE SALMON-PANTHER	1706020311	Salmon River/Twelvemile Creek	H	H	\$86,505	\$75,902	\$54.84	\$54.84	--	--	None	--
MIDDLE SALMON-PANTHER	1706020312	Salmon River/Cow Creek	H	H	\$107,687	\$107,687	\$0.38	\$0.38	--	--	None	--
MIDDLE SALMON-PANTHER	1706020313	Hat Creek	M		\$59,591		\$0.00		--	--	None	--
MIDDLE SALMON-PANTHER	1706020314	Iron Creek	H		\$43,551		\$12.37		--	--	None	--
MIDDLE SALMON-PANTHER	1706020315	Upper Panther Creek	H		\$50,780		\$0.00		--	--	None	--
MIDDLE SALMON-PANTHER	1706020316	Moyer Creek	H		\$32,875		\$0.00		--	--	None	--
MIDDLE SALMON-PANTHER	1706020317	Panther Creek/Woodtick Creek	H	H	\$76,393	\$75,033	\$0.00	\$0.00	--	--	None	--
MIDDLE SALMON-PANTHER	1706020318	Deep Creek	H		\$30,232		\$5.73		--	--	None	--
MIDDLE SALMON-PANTHER	1706020319	Napias Creek	M		\$88,189		\$21,243.06		Yes	--	Entire watershed	\$88,189
MIDDLE SALMON-PANTHER	1706020320	Panther Creek/Spring Creek	H	H	\$34,910	\$34,910	\$0.00	\$0.00	--	--	None	--
MIDDLE SALMON-PANTHER	1706020321	Big Deer Creek	L		\$35,968		\$0.00		Yes	--	Entire watershed	\$35,968
MIDDLE SALMON-PANTHER	1706020322	Panther Creek/Trail Creek	M	H	\$142,806	\$66,506	\$15,264.91	\$4.91	--	--	None	--
MIDDLE SALMON-PANTHER	1706020323	Clear Creek	M		\$38,817		\$5.51		--	--	None	--
LEMHI	1706020401	Lemhi River/Bohannon Creek	H	H	\$46,499	\$46,499	\$0.02	\$0.02	--	--	None	--
LEMHI	1706020402	Lemhi River/Whimpey Creek	H	H	\$175,727	\$165,125	\$242.13	\$242.13	--	--	None	--
LEMHI	1706020403	Lemhi River/Kenney Creek	H	H	\$55,171		\$0.25	\$0.25	--	--	None	--
LEMHI	1706020404	Agency Creek	L		\$31,358		\$17.79		--	--	None	--
LEMHI	1706020405	Lemhi River/McDevitt Creek	H	H	\$37,663	\$37,663	\$0.28	\$0.28	--	--	None	--
LEMHI	1706020406	Lemhi River/Yearian Creek	H	H	\$67,297	\$67,297	\$235.90	\$235.90	--	--	None	--
LEMHI	1706020407	Peterson Creek	H	H	\$51,955	\$51,955	\$208.35	\$208.35	--	--	None	--
LEMHI	1706020408	Big Eight Mile Creek	H	H	\$64,153	\$64,153	\$0.34	\$0.34	--	--	None	--
LEMHI	1706020409	Canyon Creek	H		\$46,947		\$0.43		--	--	None	--
LEMHI	1706020414	Hayden Creek	H		\$103,720		\$1.02		--	--	None	--
UPPER MIDDLE FORK SALMON	1706020501	Lower Loon Creek	H	H	\$106,203	\$106,203	\$0.00	\$0.00	--	--	None	--
UPPER MIDDLE FORK SALMON	1706020502	Warm Springs	H		\$76,773		\$0.00		--	--	None	--
UPPER MIDDLE FORK SALMON	1706020503	Upper Loon Creek	H		\$103,054		\$1.28		--	--	None	--
UPPER MIDDLE FORK SALMON	1706020504	Little Loon Creek	H		\$34,831		\$0.00		--	--	None	--
UPPER MIDDLE FORK SALMON	1706020505	Rapid River	H		\$98,520		\$0.00		--	--	None	--
UPPER MIDDLE FORK SALMON	1706020506	Marsh Creek	H		\$121,193		\$0.36		--	--	None	--
UPPER MIDDLE FORK SALMON	1706020507	Middle Fork Salmon River/Soldier Creek	H	H	\$122,445	\$122,445	\$0.00	\$0.00	--	--	None	--
UPPER MIDDLE FORK SALMON	1706020508	Bear Valley Creek	H		\$153,912		\$83.29		--	--	None	--
UPPER MIDDLE FORK SALMON	1706020509	Sulphur Creek	H		\$39,987		\$0.00		--	--	None	--
UPPER MIDDLE FORK SALMON	1706020510	Pistol Creek	H		\$92,342		\$0.00		--	--	None	--
UPPER MIDDLE FORK SALMON	1706020511	Indian Creek	H		\$67,649		\$0.11		--	--	None	--
UPPER MIDDLE FORK SALMON	1706020512	Upper Marble Creek	H		\$93,982		\$0.00		--	--	None	--
UPPER MIDDLE FORK SALMON	1706020513	Middle Fork Salmon River/Lower Marble Creek	H	H	\$94,970	\$94,970	\$0.00	\$0.00	--	--	None	--
LOWER MIDDLE FORK SALMON	1706020601	Lower Middle Fork Salmon River	H	H	\$123,884	\$123,884	\$0.00	\$0.00	--	--	None	--
LOWER MIDDLE FORK SALMON	1706020602	Wilson Creek	H		\$30,354		\$0.00		--	--	None	--
LOWER MIDDLE FORK SALMON	1706020603	Middle Fork Salmon River/Brush Creek	H	H	\$69,826	\$69,826	\$0.00	\$0.00	--	--	None	--
LOWER MIDDLE FORK SALMON	1706020604	Yellow Jacket Creek	H		\$127,899		\$0.00		--	--	None	--
LOWER MIDDLE FORK SALMON	1706020605	Silver Creek	H		\$84,658		\$14,342.87		--	--	None	--
LOWER MIDDLE FORK SALMON	1706020606	Upper Camas Creek	H		\$107,178		\$0.00		--	--	None	--
LOWER MIDDLE FORK SALMON	1706020607	West Fork Camas Creek	H		\$30,755		\$0.00		--	--	None	--
LOWER MIDDLE FORK SALMON	1706020608	Lower Camas Creek	H	H	\$75,226	\$53,426	\$0.00	\$0.00	--	--	None	--
LOWER MIDDLE FORK SALMON	1706020609	Middle Fork Salmon River/Sheep Creek	H	H	\$81,656	\$81,656	\$0.00	\$0.00	--	--	None	--
LOWER MIDDLE FORK SALMON	1706020610	Rush Creek	H		\$87,301		\$0.00		--	--	None	--
LOWER MIDDLE FORK SALMON	1706020611	Monumental Creek	H		\$99,647		\$0.00		--	--	None	--
LOWER MIDDLE FORK SALMON	1706020612	Big Creek/Little Marble Creek	H	H	\$29,282	\$29,282	\$0.00	\$0.00	--	--	None	--
LOWER MIDDLE FORK SALMON	1706020613	Upper Big Creek	H		\$89,604		\$0.00		--	--	None	--
LOWER MIDDLE FORK SALMON	1706020614	Beaver Creek	H		\$35,244		\$0.00		--	--	None	--
LOWER MIDDLE FORK SALMON	1706020615	Big Ramey Creek	H		\$26,891		\$0.00		--	--	None	--
LOWER MIDDLE FORK SALMON	1706020616	Big Creek/Crooked Creek	H	H	\$82,905	\$82,905	\$0.00	\$0.00	--	--	None	--
LOWER MIDDLE FORK SALMON	1706020617	Lower Big Creek	H	H	\$109,081	\$65,481	\$0.00	\$0.00	--	--	None	--
MIDDLE SALMON-CHAMBERLAIN	1706020701	Salmon River/Fall Creek	M	H	\$67,517	\$34,817	\$16,353.68	\$3.68	--	--	None	--
MIDDLE SALMON-CHAMBERLAIN	1706020702	Wind River	L		\$50,492		\$0.00		Yes	--	Entire watershed	\$50,492
MIDDLE SALMON-CHAMBERLAIN	1706020703	Salmon River/California Creek	H	H	\$108,910	\$87,110	\$0.00	\$0.00	--	--	None	--
MIDDLE SALMON-CHAMBERLAIN	1706020704	Sheep Creek	H		\$41,508		\$0.00		--	--	None	--
MIDDLE SALMON-CHAMBERLAIN	1706020705	Crooked Creek	H		\$103,721		\$2.81		--	--	None	--
MIDDLE SALMON-CHAMBERLAIN	1706020706	Salmon River/Rabbit Creek	M	H	\$39,773	\$39,773	\$1.36	\$1.36	--	--	None	--
MIDDLE SALMON-CHAMBERLAIN	1706020707	Big Mallard Creek	L		\$46,088		\$5.24		Yes	--	Entire watershed	\$46,088
MIDDLE SALMON-CHAMBERLAIN	1706020708	Salmon River/Trout Creek	H	H	\$165,643	\$165,643	\$3.49	\$3.49	--	--	None	--
MIDDLE SALMON-CHAMBERLAIN	1706020709	Bargamin Creek	H		\$92,431		\$0.00		--	--	None	--
MIDDLE SALMON-CHAMBERLAIN	1706020710	Salmon River/Rattlesnake Creek	M	H	\$45,272	\$45,272	\$0.00	\$0.00	--	--	None	--
MIDDLE SALMON-CHAMBERLAIN	1706020711	Sabe Creek	H		\$236,910		\$0.00		--	--	None	--

MIDDLE SALMON-CHAMBERLAIN	1706020712	Salmon River/Hot Springs Creek	H	H	\$144,386	\$144,386	\$0.00	\$0.00	--	--	None	--
MIDDLE SALMON-CHAMBERLAIN	1706020713	Salmon River/Disappointment Creek	H	H	\$173,986	\$173,986	\$0.00	\$0.00	--	--	None	--
MIDDLE SALMON-CHAMBERLAIN	1706020714	Horse Creek	H		\$116,411		\$0.00		--	--	None	--
MIDDLE SALMON-CHAMBERLAIN	1706020715	Salmon River/Kitchen Creek	H	H	\$55,401	\$55,401	\$0.00	\$0.00	--	--	None	--
MIDDLE SALMON-CHAMBERLAIN	1706020716	Cottonwood Creek	H		\$48,574		\$0.00		--	--	None	--
MIDDLE SALMON-CHAMBERLAIN	1706020717	Lower Chamberlain/McCalla Creek	H	H	\$74,326	\$74,326	\$0.00	\$0.00	--	--	None	--
MIDDLE SALMON-CHAMBERLAIN	1706020718	Upper Chamberlain Creek	H		\$113,069		\$0.00		--	--	None	--
MIDDLE SALMON-CHAMBERLAIN	1706020719	Warren Creek	H		\$82,928		\$340.09		--	--	None	--
SOUTH FORK SALMON	1706020801	Lower South Fork Salmon River	H	H	\$127,406	\$116,804	\$0.00	\$0.00	--	--	None	--
SOUTH FORK SALMON	1706020802	South Fork Salmon River/Sheep Creek	H	H	\$101,219	\$101,219	\$0.00	\$0.00	--	--	None	--
SOUTH FORK SALMON	1706020803	Lower East Fork South Fork Salmon River	H	H	\$70,346	\$59,744	\$0.00	\$0.00	--	--	None	--
SOUTH FORK SALMON	1706020804	Upper East Fork South Fork Salmon River	H		\$123,290		\$419.27		--	--	None	--
SOUTH FORK SALMON	1706020805	Lower Johnson Creek	H	H	\$78,571	\$57,366	\$2.09	\$2.09	--	--	None	--
SOUTH FORK SALMON	1706020806	Burntlog Creek	H		\$30,960		\$0.00		--	--	None	--
SOUTH FORK SALMON	1706020807	Upper Johnson Creek	H		\$114,723		\$0.00		--	--	None	--
SOUTH FORK SALMON	1706020808	Upper South Fork Salmon River	H		\$151,923		\$0.00		--	--	None	--
SOUTH FORK SALMON	1706020809	South Fork Salmon River/Cabin Creek	H	H	\$56,738	\$56,738	\$0.00	\$0.00	--	--	None	--
SOUTH FORK SALMON	1706020810	South Fork Salmon River/Blackmare Creek	H	H	\$102,663	\$80,863	\$5,450.05	\$0.05	--	--	None	--
SOUTH FORK SALMON	1706020811	Buckhorn Creek	H		\$39,052		\$0.00		--	--	None	--
SOUTH FORK SALMON	1706020812	South Fork Salmon River/Fitsum Creek	H	H	\$40,851	\$40,851	\$0.00	\$0.00	--	--	None	--
SOUTH FORK SALMON	1706020813	Lower Secesh River	H	H	\$101,579	\$90,977	\$8.38	\$8.38	--	--	None	--
SOUTH FORK SALMON	1706020814	Middle Secesh River	H	H	\$79,444	\$68,544	\$840.61	\$2.15	--	--	None	--
SOUTH FORK SALMON	1706020815	Upper Secesh River	H		\$36,225		\$0.00		--	--	None	--
LOWER SALMON	1706020901	Salmon River/China Creek	H	H	\$9,554	\$9,554	\$0.00	\$0.00	--	--	None	--
LOWER SALMON	1706020902	Eagle Creek	H		\$2,625		\$0.00		--	--	None	--
LOWER SALMON	1706020903	Deer Creek	M		\$1,243		\$0.09		--	--	None	--
LOWER SALMON	1706020904	Salmon River/Cottonwood Creek	H	H	\$5,688	\$5,688	\$0.15	\$0.15	--	--	None	--
LOWER SALMON	1706020905	Salmon River/Deep Creek	H	H	\$22,864	\$12,262	\$0.04	\$0.04	--	--	None	--
LOWER SALMON	1706020906	Rock Creek	M		\$12,355		\$0.00		--	--	None	--
LOWER SALMON	1706020907	Salmon River/Hammer Creek	H	H	\$60,239	\$5,739	\$545.03	\$0.03	--	--	None	--
LOWER SALMON	1706020908	White Bird Creek	H		\$59,730		\$46.73		--	--	None	--
LOWER SALMON	1706020909	Salmon River/McKinzie Creek	H	H	\$21,711	\$21,711	\$0.05	\$0.05	--	--	None	--
LOWER SALMON	1706020910	Skookumchuck Creek	H		\$17,850		\$0.78		--	--	None	--
LOWER SALMON	1706020911	Slate Creek	H		\$137,636		\$1,214.71		--	--	None	--
LOWER SALMON	1706020912	Salmon River/John Day Creek	H	H	\$196,230	\$99,023	\$213.15	\$0.12	--	--	None	--
LOWER SALMON	1706020913	Salmon River/Lake Creek	H	H	\$144,548	\$79,445	\$151.88	\$0.07	--	--	None	--
LOWER SALMON	1706020914	Salmon River/Van Creek	M		\$26,230		\$7.30		--	--	None	--
LOWER SALMON	1706020915	French Creek	H		\$46,215		\$0.00		--	--	None	--
LOWER SALMON	1706020916	Partridge Creek	M		\$53,103		\$4.98		--	--	None	--
LOWER SALMON	1706020917	Rice Creek	M		\$11,652		\$1,178.11		Yes	--	Entire watershed	\$11,652
LITTLE SALMON	1706021001	Lower Little Salmon River	M	H	\$301,774	\$73,766	\$372.34	\$0.04	--	--	None	--
LITTLE SALMON	1706021002	Little Salmon River/Hard Creek	M	M	\$139,043	\$73,643	\$894.49	\$125.07	Yes	--	None [d]	--
LITTLE SALMON	1706021003	Hazard Creek	M		\$33,092		\$0.00		--	--	None	--
LITTLE SALMON	1706021006	Boulder Creek	H		\$62,487		\$454.40		--	--	None	--
LITTLE SALMON	1706021007	Rapid River	H		\$131,898		\$0.23		--	--	None	--
UPPER SELWAY	1706030101	Selway River/Pettibone Creek	H	H	\$94,672	\$94,672	\$0.00	\$0.00	--	--	None	--
UPPER SELWAY	1706030102	Bear Creek	H		\$160,043		\$0.00		--	--	None	--
UPPER SELWAY	1706030103	Selway River/Gardner Creek	H	H	\$422,867	\$422,867	\$0.00	\$0.00	--	--	None	--
UPPER SELWAY	1706030104	White Cap Creek	H		\$493,440		\$0.00		--	--	None	--
UPPER SELWAY	1706030105	Indian Creek	H		\$186,295		\$0.00		--	--	None	--
UPPER SELWAY	1706030106	Upper Selway River	H		\$774,776		\$0.00		--	--	None	--
UPPER SELWAY	1706030107	Little Clearwater River	H		\$266,449		\$0.00		--	--	None	--
UPPER SELWAY	1706030108	Running Creek	H		\$174,566		\$0.00		--	--	None	--
UPPER SELWAY	1706030109	Goat Creek	H		\$25,361		\$0.00		--	--	None	--
LOWER SELWAY	1706030201	Selway River/Goddard Creek	H	H	\$88,261	\$88,261	\$3.17	\$3.17	--	--	None	--
LOWER SELWAY	1706030202	Gedney Creek	H		\$38,323		\$0.00		--	--	None	--
LOWER SELWAY	1706030203	Selway River/Three Links Creek	H	H	\$79,694	\$79,694	\$0.00	\$0.00	--	--	None	--
LOWER SELWAY	1706030204	Upper Three Links Creek	H		\$21,762		\$0.00		--	--	None	--
LOWER SELWAY	1706030205	Rhoda Creek	H		\$46,022		\$0.00		--	--	None	--
LOWER SELWAY	1706030207	North Fork Moose Creek	H	H	\$81,788	\$81,788	\$0.00	\$0.00	--	--	None	--
LOWER SELWAY	1706030208	East Fork Moose Creek/Trout Creek	H	H	\$91,362	\$91,362	\$0.00	\$0.00	--	--	None	--
LOWER SELWAY	1706030209	Upper East Fork Moose Creek	H		\$92,176		\$0.00		--	--	None	--
LOWER SELWAY	1706030210	Marten Creek	H		\$26,907		\$0.00		--	--	None	--
LOWER SELWAY	1706030211	Upper Meadow Creek	H		\$46,487		\$0.00		--	--	None	--
LOWER SELWAY	1706030212	Middle Meadow Creek	H	H	\$55,551	\$55,551	\$14.42	\$14.42	--	--	None	--
LOWER SELWAY	1706030213	Lower Meadow Creek	H	H	\$93,350	\$93,350	\$0.00	\$0.00	--	--	None	--
LOWER SELWAY	1706030214	O'Hara Creek	H		\$47,124		\$5.32		--	--	None	--
LOCHSA	1706030301	Lower Lochsa River	H	H	\$174,635	\$158,295	\$398.62	\$0.09	--	--	None	--
LOCHSA	1706030302	Fish Creek	H		\$70,332		\$0.00		--	--	None	--
LOCHSA	1706030303	Lochsa River/Stanley Creek	H	H	\$158,932	\$104,432	\$0.00	\$0.00	--	--	None	--
LOCHSA	1706030304	Lochsa River/Squaw Creek	H	H	\$132,616	\$99,916	\$860.53	\$0.00	--	--	None	--
LOCHSA	1706030305	Lower Crooked Fork	H	H	\$6,222	\$6,222	\$0.00	\$0.00	--	--	None	--
LOCHSA	1706030306	Upper Crooked Fork	H		\$50,920		\$0.00		--	--	None	--
LOCHSA	1706030307	Brushy Fork	H		\$90,826		\$0.00		--	--	None	--
LOCHSA	1706030308	Lower White Sands Creek	H	H	\$57,621	\$35,821	\$0.00	\$0.00	--	--	None	--
LOCHSA	1706030309	Storm Creek	H		\$39,826		\$0.00		--	--	None	--
LOCHSA	1706030310	Upper White Sands Creek	H		\$128,919		\$0.00		--	--	None	--
LOCHSA	1706030311	Warm Springs Creek	H		\$57,392		\$0.00		--	--	None	--
LOCHSA	1706030312	Fish Lake Creek	H		\$41,956		\$0.00		--	--	None	--
LOCHSA	1706030313	Boulder Creek	H		\$38,770		\$0.00		--	--	None	--
LOCHSA	1706030314	Old Man Creek	H		\$35,628		\$0.00		--	--	None	--
MIDDLE FORK CLEARWATER	1706030401	Middle Fork Clearwater River/Maggie Creek	H	H	\$66,289	\$33,589	\$34.35	\$0.00	--	--	None	--
MIDDLE FORK CLEARWATER	1706030402	Clear Creek	H		\$54,433		\$0.05		--	--	None	--
SOUTH FORK CLEARWATER	1706030501	Lower South Fork Clearwater River	M	H	\$83,800	\$48,677	\$10.97	\$0.01	--	--	None	--
SOUTH FORK CLEARWATER	1706030502	South Fork Clearwater River/Meadow Creek	H	H	\$53,400	\$31,600	\$21,817.95	\$17.95	--	--	None	--
SOUTH FORK CLEARWATER	1706030503	South Fork Clearwater River/Peasley Creek	L	H	\$62,713	\$62,713	\$0.00	\$0.00	--	Yes	Tributaries Only	\$62,713
SOUTH FORK CLEARWATER	1706030504	South Fork Clearwater River/Leggett Creek	M	H	\$64,070	\$64,070	\$3.03	\$3.03	--	--	None	--

SOUTH FORK CLEARWATER	1706030505	Newsome Creek	H		\$63,542		\$0.00		--	--	None	--
SOUTH FORK CLEARWATER	1706030506	American River	H		\$63,520		\$3.44		--	--	None	--
SOUTH FORK CLEARWATER	1706030507	Red River	H		\$169,701		\$2,079.60		--	--	None	--
SOUTH FORK CLEARWATER	1706030508	Crooked River	H		\$56,338		\$10.67		--	--	None	--
SOUTH FORK CLEARWATER	1706030509	Ten Mile Creek	H		\$54,135		\$0.00		--	--	None	--
SOUTH FORK CLEARWATER	1706030510	John's Creek	H		\$89,285		\$0.00		--	--	None	--
SOUTH FORK CLEARWATER	1706030511	Mill Creek	H		\$30,038		\$17.07		--	--	None	--
SOUTH FORK CLEARWATER	1706030512	Three Mile Creek	L		\$49,149		\$15.08		Yes	--	Entire watershed	\$49,149
SOUTH FORK CLEARWATER	1706030513	Cottonwood Creek	M		\$8,927		\$0.48		--	--	None	--
CLEARWATER	1706030601	Lower Clearwater River	L	H	\$361,268	\$140,772	\$34.49	\$12.96	--	Yes	Tributaries Only	\$140,772
CLEARWATER	1706030602	Clearwater River/Lower Potlatch River	M	H	\$11,692	\$792	\$33.64	\$0.00	--	--	None	--
CLEARWATER	1706030603	Potlatch River/Middle Potlatch Creek	M	H	\$68,242	\$122	\$36.23	\$0.00	--	--	None	--
CLEARWATER	1706030604	Lower Big Bear Creek	M		\$34,624		\$20.93		--	--	None	--
CLEARWATER	1706030606	Potlatch River/Pine Creek	H	H	\$33,369	\$669	\$31.84	\$0.00	--	--	None	--
CLEARWATER	1706030607	Upper Potlatch River	H		\$84,040		\$37.84		--	--	None	--
CLEARWATER	1706030608	Clearwater River/Bedrock Creek	H	H	\$22,857	\$1,057	\$32.30	\$0.00	--	--	None	--
CLEARWATER	1706030609	Clearwater River/Jack's Creek	H	H	\$65,751	\$351	\$183.19	\$0.00	--	--	None	--
CLEARWATER	1706030610	Big Canyon Creek	H		\$70,471		\$108.64		--	--	None	--
CLEARWATER	1706030611	Little Canyon Creek	H		\$13,628		\$15.09		--	--	None	--
CLEARWATER	1706030612	Clearwater River/Lower Orofino Creek	L	H	\$97,944	\$16,204	\$16.57	\$0.00	--	--	None	--
CLEARWATER	1706030613	Upper Orofino Creek	L		\$33,500		\$5.48		--	--	None	--
CLEARWATER	1706030614	Jim Ford Creek	M		\$93,956		\$66.45		--	--	None	--
CLEARWATER	1706030615	Lower Lolo Creek	H	H	\$36,511	\$14,711	\$91.99	\$0.01	--	--	None	--
CLEARWATER	1706030616	Middle Lolo Creek	H	H	\$20,730	\$20,730	\$0.17	\$0.17	--	--	None	--
CLEARWATER	1706030617	Musselshell Creek	H		\$50,773		\$2,973.26		--	--	None	--
CLEARWATER	1706030618	Upper Lolo Creek	H		\$376,952		\$0.00		--	--	None	--
CLEARWATER	1706030619	Eldorado Creek	H		\$35,486		\$0.00		--	--	None	--
CLEARWATER	1706030620	Clearwater River/Fivemile Creek	M	H	\$90,400	\$14,100	\$181.24	\$0.00	--	--	None	--
CLEARWATER	1706030621	Clearwater River/Sixmile Creek	M	H	\$24,648	\$2,848	\$62.65	\$0.00	--	--	None	--
CLEARWATER	1706030622	Clearwater River/Tom Taha Creek	M	H	\$67,230	\$12,730	\$27.36	\$0.00	--	--	None	--
CLEARWATER	1706030623	Lower Lawyer Creek	H	H	\$16,007	\$1,027	\$10.79	\$0.00	--	--	None	--
CLEARWATER	1706030624	Middle Lawyer Creek	H		\$303		\$0.00		--	--	None	--
CLEARWATER	1706030627	Cottonwood Creek	M		\$46		\$0.00		--	--	None	--
CLEARWATER	1706030630	Upper Sweetwater Creek	M		\$117,466		\$1,025.66		Yes	--	None [e]	--
CLEARWATER	1706030631	Lower Sweetwater Creek	H	H	\$50,117	\$11,977	\$19.24	\$0.00	--	--	None	--
LOWER NORTH FORK CLEARWATER	1706030801	Lower North Fork Clearwater River	L		\$32,749		\$78.84		--	--	None	--
MIDDLE COLUMBIA/LAKE WALLULA	1707010101	Upper Lake Wallula	H		\$943,445		\$33.44		--	--	None	--
MIDDLE COLUMBIA/LAKE WALLULA	1707010102	Lower Lake Wallula	H		\$4,080		\$30.30		--	--	None	--
MIDDLE COLUMBIA/LAKE WALLULA	1707010106	Upper Lake Umatilla	H		\$5,440		\$2.47		--	--	None	--
MIDDLE COLUMBIA/LAKE WALLULA	1707010109	Middle Lake Umatilla	H		\$36,429		\$12.04		--	--	None	--
MIDDLE COLUMBIA/LAKE WALLULA	1707010114	Lower Lake Umatilla	H		\$294,327		\$582.22		--	--	None	--
MIDDLE COLUMBIA/HOOD	1707010501	Upper Middle Columbia/Hood	H		\$320,406		\$312.59		--	--	None	--
MIDDLE COLUMBIA/HOOD	1707010504	Middle Columbia/Mill Creek	H		\$147,910		\$11.67		--	--	None	--
MIDDLE COLUMBIA/HOOD	1707010512	Middle Columbia/Grays Creek	H		\$13,600		\$5.14		--	--	None	--
MIDDLE COLUMBIA/HOOD	1707010513	Middle Columbia/Eagle Creek	H		\$5,440		\$12.27		--	--	None	--
LOWER COLUMBIA/SANDY	1708000107	Columbia Gorge Tributaries	H		\$495,915		\$57.63		--	--	None	--
Lower Columbia Corridor (Sandy/Washougal to Ocean)			H									

Maximum Economic Impact if all areas were designated as critical habitat		\$35,746,361
Total reduction in economic impact of proposed exclusions		\$761,123
Total economic impact of areas proposed for critical habitat		\$34,985,238

Footnotes:

* Blanks for the conservation value of connectivity corridors indicate that a watershed does not include a rearing and migration corridor serving occupied watersheds upstream (i.e., there are no occupied upstream watersheds).

[a] Thompson Creek is a very large stream with a good amount of steelhead habitat. The mine that caused much of the habitat degradation is in remediation.

[b] Notwithstanding considerable past degradation from mining, the Yankee Fork supports good steelhead production and there are several miles of rearing habitat. This area is also the site of numerous restoration efforts by the Shoshone-Bannock Tribes.

[c] Squaw Creek is a very large stream with a good amount of steelhead habitat. The mine that cause much of the habitat degradation is in remediation.

[d] Habitat is limiting in the Little Salmon River. This watershed maintains connectivity of rearing and migration habitats for both upstream and downstream watersheds.

[e] Sweetwater Creek provides the best spawning and rearing habitat in Lapwai Creek for A-run steelhead. Lapwai Creek is one of the few remaining watersheds still producing A-run steelhead.

Table A.11. Middle Columbia River *O. mykiss* ESU. Conservation-value ratings, economic impacts, and proposed exclusions for fifth-field watersheds occupied by the Middle Columbia River *Oncorhynchus mykiss* Evolutionarily Significant Unit (ESU). The conservation value rating for a watershed reflects the benefit of designation for the entire watershed, or in cases where the watershed includes a connectivity corridor serving other occupied watersheds, the rating reflects the benefit of designating the tributaries only. The rating for the connectivity corridor reflects the conservation benefit of designating rearing and migration habitat. Economic impacts are reported as the total annual cost of Endangered Species Act section 7 consultations (in U.S. dollars (\$) per year), and as the per capita annual cost of consultations (in U.S. dollars (\$) per year per person). The economic impact of tributaries represents the annual total cost for a watershed less the cost associated with the connectivity corridor(s). Local economic impacts reflect the costs associated with activities geographically confined in scope, and unlikely to have regional impacts or impacts beyond the subject watershed.

Occupied Areas			Conservation Value Ratings		Annual Total, Tributary-only, and Local per capita Economic Impacts				ESA Section 4(b)(2) Consideration of Watersheds for Exclusion from Designation as Critical Habitat			
Unit/Subbasin Name	Watershed Identification Code	Watershed Name	Benefit of designating watershed	Benefit of designating connectivity corridor *	Annual Total Impact	Annual Tributary Impact	Annual Local Impact per capita	Annual Local Tributary Impact per capita	Entire Watershed Eligible for Exclusion	Tributaries-only Eligible for Exclusion	Proposed Area for Exclusion	Reduction in Economic Impact from Proposed Exclusion
UPPER COLUMBIA/PRIEST RAPIDS	1702001606	Columbia River/Zintle Canyon	H	H	\$499,939	\$149,555	\$6.21	\$1.98	--	--	None	--
UPPER YAKIMA	1703000101	Upper Yakima River	H		\$2,155,444		\$492.99		--	--	None	--
UPPER YAKIMA	1703000102	Tenaway River	H	H	\$566,525	\$417,930	\$37.90	\$6.68	--	--	None	--
UPPER YAKIMA	1703000103	Middle Upper Yakima River	H	H	\$1,383,651	\$715,323	\$26.09	\$1.22	--	--	None	--
UPPER YAKIMA	1703000104	Umtanum/Wenas	M	H	\$459,573	\$196,503	\$21.37	\$7.37	--	--	None	--
NACHES	1703000201	Little Naches River	H		\$1,324,346		\$6,236.76		--	--	None	--
NACHES	1703000202	Naches River/RattleSnake Creek	H	H	\$854,711	\$853,351	\$11.56	\$10.24	--	--	None	--
NACHES	1703000203	Naches River/Tieton River	H	H	\$2,266,329	\$1,292,662	\$62.42	\$16.54	--	--	None	--
LOWER YAKIMA	1703000301	Antanum Creek	H		\$29,345		\$0.67		--	--	None	--
LOWER YAKIMA	1703000302	Upper Lower Yakima River	M	H	\$425,588	\$101,230	\$4.77	\$0.49	--	--	None	--
LOWER YAKIMA	1703000303	Upper Toppenish Creek	H		\$232,500		\$91.69		--	--	None	--
LOWER YAKIMA	1703000304	Lower Toppenish Creek	M	H	\$188,849	\$96,522	\$3.15	\$0.99	--	--	None	--
LOWER YAKIMA	1703000305	Satus Creek	H		\$71,514		\$32.38		--	--	None	--
LOWER YAKIMA	1703000306	Yakima River/Spring Creek	M	H	\$399,891	\$219,641	\$6.40	\$3.19	--	--	None	--
LOWER YAKIMA	1703000307	Yakima River/Cold Creek	H	H	\$178,741	\$101,399	\$3.41	\$1.41	--	--	None	--
MIDDLE COLUMBIA/LAKE WALLULA	1707010101	Upper Lake Wallula	H	H	\$1,061,614	\$118,169	\$33.44	\$1.09	--	--	None	--
MIDDLE COLUMBIA/LAKE WALLULA	1707010102	Lower Lake Wallula	H	H	\$140,237	\$136,157	\$30.30	\$29.27	--	--	None	--
MIDDLE COLUMBIA/LAKE WALLULA	1707010105	Glade Creek	M		\$28,846		\$48.39		--	--	None	--
MIDDLE COLUMBIA/LAKE WALLULA	1707010106	Upper Lake Umatilla	H	H	\$19,723	\$14,283	\$2.47	\$1.50	--	--	None	--
MIDDLE COLUMBIA/LAKE WALLULA	1707010109	Middle Lake Umatilla	H	H	\$56,761	\$20,332	\$12.04	\$2.72	--	--	None	--
MIDDLE COLUMBIA/LAKE WALLULA	1707010110	Alder Creek	M		\$5,562		\$0.20		--	--	None	--
MIDDLE COLUMBIA/LAKE WALLULA	1707010111	Pine Creek	M		\$2,975		\$0.18		--	--	None	--
MIDDLE COLUMBIA/LAKE WALLULA	1707010112	Wood Gulch	H		\$68,784		\$1,109.92		--	--	None	--
MIDDLE COLUMBIA/LAKE WALLULA	1707010113	Rock Creek	H		\$23,468		\$3.19		--	--	None	--
MIDDLE COLUMBIA/LAKE WALLULA	1707010114	Lower Lake Umatilla	H	H	\$503,126	\$208,799	\$582.22	\$213.39	--	--	None	--
WALLA WALLA	1707010201	Upper Walla Walla River	H		\$269,242		\$0.00		--	--	None	--
WALLA WALLA	1707010202	Mill Creek	H		\$455,049		\$12.21		--	--	None	--
WALLA WALLA	1707010203	Upper Touchet River	H		\$204,598		\$5.36		--	--	None	--
WALLA WALLA	1707010204	Middle Touchet River	H	H	\$30,146	\$15,161	\$6.93	\$0.00	--	--	None	--
WALLA WALLA	1707010207	Lower Touchet River	H	H	\$133	\$133	\$0.00	\$0.00	--	--	None	--
WALLA WALLA	1707010208	Cottonwood Creek	M	H	\$161,087	\$118,852	\$5.35	\$3.81	--	--	None	--
WALLA WALLA	1707010209	Pine Creek	L		\$86,218		\$22.95		Yes	--	Entire watershed	\$86,218
WALLA WALLA	1707010210	Dry Creek	M		\$24,366		\$26.33		--	--	None	--
WALLA WALLA	1707010211	Lower Walla Walla River	M	H	\$325,086	\$21,128	\$93.07	\$0.00	--	--	None	--
UMATILLA	1707010301	Upper Umatilla River	H		\$425,514		\$0.00		--	--	None	--
UMATILLA	1707010302	Meacham Creek	H		\$402,652		\$17.44		--	--	None	--
UMATILLA	1707010303	Umatilla River/Mission Creek	M	H	\$88,611	\$14,644	\$4.56	\$0.00	--	--	None	--
UMATILLA	1707010304	Wildhorse Creek	L		\$858,455		\$359.19		Yes	--	Entire watershed	\$858,455
UMATILLA	1707010305	Mckay Creek	H		\$146,132		\$24.92		--	--	None	--
UMATILLA	1707010306	Birch Creek	H		\$714,279		\$274.72		--	--	None	--
UMATILLA	1707010307	Umatilla River/Alkali Canyon	H	H	\$1,426	\$66	\$1.10	\$0.05	--	--	None	--
UMATILLA	1707010308	Stage Gulch	L		\$36,222		\$9.66		--	--	None	--
UMATILLA	1707010310	Lower Butter Creek	L		\$19,412		\$0.01		--	--	None	--
UMATILLA	1707010313	Lower Umatilla River	H	H	\$113,609	\$44,900	\$3.24	\$0.50	--	--	None	--
MIDDLE COLUMBIA/HOOD	1707010501	Upper Middle Columbia/Hood	L	H	\$373,628	\$53,221	\$312.59	\$10.34	--	--	None	--
MIDDLE COLUMBIA/HOOD	1707010502	Fifteenmile Creek	H	H	\$126,505	\$87,407	\$35.13	\$0.00	--	--	None	--
MIDDLE COLUMBIA/HOOD	1707010503	Fivemile Creek	H		\$130,490		\$60.77		--	--	None	--
MIDDLE COLUMBIA/HOOD	1707010504	Middle Columbia/Mill Creek	H		\$341,896		\$11.67		--	--	None	--
MIDDLE COLUMBIA/HOOD	1707010505	Mosier Creek	M		\$21,840		\$12.70		--	--	None	--
MIDDLE COLUMBIA/HOOD	1707010509	White Salmon River	M		\$2,240,843		\$1.32		Yes	--	None [a]	--
MIDDLE COLUMBIA/HOOD	1707010510	Little White Salmon River	M		\$592,140		\$340.63		Yes	--	Entire watershed	\$592,140
MIDDLE COLUMBIA/HOOD	1707010512	Middle Columbia/Grays Creek	M	H	\$211,237	\$197,637	\$5.14	\$3.19	--	--	None	--
MIDDLE COLUMBIA/HOOD	1707010513	Middle Columbia/Eagle Creek	H	H	\$343,609		\$12.27		--	--	None	--
KLICKITAT	1707010601	Upper Klickitat River	H		\$2,291		\$0.00		--	--	None	--
KLICKITAT	1707010602	Middle Klickitat River	H	H	\$33,385	\$10,820	\$22.29	\$19.76	--	--	None	--
KLICKITAT	1707010603	Little Klickitat River	H		\$314,199		\$50.03		--	--	None	--
KLICKITAT	1707010604	Lower Klickitat River	H	H	\$259,886	\$20,586	\$117.60	\$4.99	--	--	None	--
UPPER JOHN DAY	1707020103	Middle South Fork John Day	H		\$324,645		\$0.00		--	--	None	--
UPPER JOHN DAY	1707020104	Murderers Creek	H		\$268,430		\$0.00		--	--	None	--
UPPER JOHN DAY	1707020105	Lower South Fork John Day	H	H	\$369,835	\$368,475	\$6.91	\$0.11	--	--	None	--
UPPER JOHN DAY	1707020106	Upper John Day River	H		\$181,602		\$0.00		--	--	None	--
UPPER JOHN DAY	1707020107	Canyon Creek	H		\$226,715		\$7.32		--	--	None	--
UPPER JOHN DAY	1707020108	Strawberry Creek	H	H	\$242,209	\$240,849	\$13.13	\$12.59	--	--	None	--
UPPER JOHN DAY	1707020109	Beech Creek	H		\$140,594		\$0.00		--	--	None	--
UPPER JOHN DAY	1707020110	Laycock Creek	H	H	\$148,786	\$144,706	\$9.34	\$6.74	--	--	None	--
UPPER JOHN DAY	1707020111	Fields Creek	M	H	\$138,093		\$3.07	\$0.00	--	--	None	--
UPPER JOHN DAY	1707020112	Upper Middle John Day	H	H	\$222,210	\$222,210	\$0.00	\$0.00	--	--	None	--
UPPER JOHN DAY	1707020113	Mountain Creek	H		\$488,129		\$13,341.58		--	--	None	--

UPPER JOHN DAY	1707020114	Rock Creek	H	H	\$201,165	\$201,165	\$10,602.50	\$10,602.50	--	--	None	--
UPPER JOHN DAY	1707020115	John Day River/Johnson Creek	H	H	\$220,009	\$220,009	\$12.57	\$0.00	--	--	None	--
NORTH FORK JOHN DAY	1707020201	Upper North Fork John Day River	H		\$302,006		\$0.00		--	--	None	--
NORTH FORK JOHN DAY	1707020202	Granite Creek	H		\$424,776		\$0.87		--	--	None	--
NORTH FORK JOHN DAY	1707020203	North Fork John Day River/Big Creek	H	H	\$560,519	\$560,519	\$0.00	\$0.00	--	--	None	--
NORTH FORK JOHN DAY	1707020204	Desolation Creek	H		\$336,172		\$0.00		--	--	None	--
NORTH FORK JOHN DAY	1707020205	Upper Camas Creek	H		\$488,564		\$0.00		--	--	None	--
NORTH FORK JOHN DAY	1707020206	Lower Camas Creek	H	H	\$403,386	\$369,677	\$192.01	\$74.14	--	--	None	--
NORTH FORK JOHN DAY	1707020207	North Fork John Day River/Potamus Creek	H	H	\$627,648	\$627,648	\$143.61	\$143.61	--	--	None	--
NORTH FORK JOHN DAY	1707020208	Wall Creek	H		\$591,367		\$1,023.93		--	--	None	--
NORTH FORK JOHN DAY	1707020209	Cottonwood Creek	H		\$155,395		\$0.00		--	--	None	--
NORTH FORK JOHN DAY	1707020210	Lower North Fork John Day River	M	H	\$172,571	\$172,571	\$64.65	\$64.65	--	--	None	--
MIDDLE FORK JOHN DAY	1707020301	Upper Middle Fork John Day River	H		\$262,613		\$543.75		--	--	None	--
MIDDLE FORK JOHN DAY	1707020302	Camp Creek	H	H	\$400,892	\$400,892	\$12.64	\$12.64	--	--	None	--
MIDDLE FORK JOHN DAY	1707020303	Big Creek	H	H	\$256,758	\$256,758	\$0.00	\$0.00	--	--	None	--
MIDDLE FORK JOHN DAY	1707020304	Long Creek	H		\$122,673		\$63.68		--	--	None	--
MIDDLE FORK JOHN DAY	1707020305	Lower Middle Fork John Day River	L	H	\$15,545	\$15,545	\$0.54	\$0.54	--	--	None	--
LOWER JOHN DAY	1707020401	Lower John Day River/Kahler Creek	H	H	\$301,899	\$278,739	\$85.47	\$26.84	--	--	None	--
LOWER JOHN DAY	1707020402	Lower John Day River/Service Creek	H	H	\$205,173	\$205,173	\$80.32	\$80.32	--	--	None	--
LOWER JOHN DAY	1707020403	Bridge Creek	H		\$471,401		\$67.96		--	--	None	--
LOWER JOHN DAY	1707020404	Lower John Day River/Muddy Creek	H	H	\$288,566	\$288,566	\$256.51	\$256.51	--	--	None	--
LOWER JOHN DAY	1707020405	Lower John Day River/Clarno	L	H	\$172,252	\$172,252	\$0.00	\$0.00	--	Yes	Tributaries Only	\$172,252
LOWER JOHN DAY	1707020406	Butte Creek	M		\$8,895		\$0.00		--	--	None	--
LOWER JOHN DAY	1707020407	Pine Hollow	H		\$70,548		\$0.00		--	--	None	--
LOWER JOHN DAY	1707020408	Thirtymile Creek	M		\$67,278		\$11.59		--	--	None	--
LOWER JOHN DAY	1707020409	Lower John Day River/Ferry Canyon	L	H	\$173,655	\$173,655	\$0.00	\$0.00	--	Yes	Tributaries Only	\$173,655
LOWER JOHN DAY	1707020410	Lower John Day River/Scott Canyon	L	H	\$165,264	\$165,264	\$293.04	\$293.04	--	Yes	Tributaries Only	\$165,264
LOWER JOHN DAY	1707020411	Upper Rock Creek	H		\$1,093,416		\$10,997.80		--	--	None	--
LOWER JOHN DAY	1707020412	Lower Rock Creek	M	H	\$134,564	\$25,564	\$726.67	\$0.00	--	--	None	--
LOWER JOHN DAY	1707020413	Grass Valley Canyon	M		\$6,352		\$1.79		--	--	None	--
LOWER JOHN DAY	1707020414	Lower John Day River/McDonald Ferry	H	H	\$20,240	\$20,240	\$0.32	\$0.32	--	--	None	--
LOWER DESCHUTES	1707030603	Upper Deschutes River	H	H	\$1,553,685	\$26,619	\$0.41	\$0.00	--	--	None	--
LOWER DESCHUTES	1707030604	Mill Creek	H	H	\$18,427	\$18,427	\$0.37	\$0.37	--	--	None	--
LOWER DESCHUTES	1707030605	Beaver Creek	H		\$19,890		\$0.00		--	--	None	--
LOWER DESCHUTES	1707030606	Warm Springs River	H	H	\$59,306	\$57,946	\$4.35	\$0.00	--	--	None	--
LOWER DESCHUTES	1707030607	Middle Deschutes River	H	H	\$112,556	\$111,196	\$34.01	\$32.36	--	--	None	--
LOWER DESCHUTES	1707030608	Bakeoven Creek	H		\$10,570		\$0.00		--	--	None	--
LOWER DESCHUTES	1707030610	White River	L		\$905,133		\$308.00		Yes	--	Entire watershed	\$905,133
LOWER DESCHUTES	1707030611	Buck Hollow Creek	H		\$118,019		\$937.54		--	--	None	--
LOWER DESCHUTES	1707030612	Lower Deschutes River	H	H	\$140,192	\$140,192	\$0.09	\$0.09	--	--	None	--
TROUT	1707030701	Upper Trout Creek	H		\$165,495		\$135.93		--	--	None	--
TROUT	1707030702	Antelope Creek	M		\$67,205		\$0.24		--	--	None	--
TROUT	1707030704	Mud Springs Creek	L		\$50,745		\$0.03		--	--	None	--
TROUT	1707030705	Lower Trout Creek	H	H	\$17,721	\$17,721	\$0.00	\$0.00	--	--	None	--
LOWER COLUMBIA/SANDY	1708000107	Columbia Gorge Tributaries	H	H	\$495,915		\$57.63		--	--	None	--
Lower Columbia Corridor (Sandy/Washougal to Ocean)				H								

Maximum Economic Impact if all areas were designated as critical habitat	\$37,510,095
Total reduction in economic impact of proposed exclusions	\$2,953,117
Total economic impact of areas proposed for critical habitat	\$34,556,978

Footnotes:

* Blanks for the conservation value of connectivity corridors indicate that a watershed does not include a rearing and migration corridor serving occupied watersheds upstream (i.e., there are no occupied upstream watersheds).

[a] The White Salmon River is an important focus of restoration efforts.

Table A.12. Lower Columbia River *O. mykiss* ESU. Conservation-value ratings, economic impacts, and proposed exclusions for fifth-field watersheds occupied by the Lower Columbia River *Oncorhynchus mykiss* Evolutionarily Significant Unit (ESU). The conservation value rating for a watershed reflects the benefit of designation for the entire watershed, or in cases where the watershed includes a connectivity corridor serving other occupied watersheds, the rating reflects the benefit of designating the tributaries only. The rating for the connectivity corridor reflects the conservation benefit of designating rearing and migration habitat. Economic impacts are reported as the total annual cost of Endangered Species Act section 7 consultations (in U.S. dollars (\$) per year), and as the per capita annual cost of consultations (in U.S. dollars (\$) per year per person). The economic impact of tributaries represents the annual total cost for a watershed less the cost associated with the connectivity corridor(s). Local economic impacts reflect the costs associated with activities geographically confined in scope, and unlikely to have regional impacts or impacts beyond the subject watershed.

Occupied Areas			Conservation Value Ratings		Annual Total, Tributary-only, and Local per capita Economic Impacts				ESA Section 4(b)(2) Consideration of Watersheds for Exclusion from Designation as Critical Habitat			
			Benefit of designating watershed	Benefit of designating connectivity corridor *	Annual Total Impact	Annual Tributary Impact	Annual Local Impact per capita	Annual Local Tributary Impact per capita	Entire Watershed Eligible for Exclusion	Tributaries-only Eligible for Exclusion	Proposed Area for Exclusion	Reduction in Economic Impact from Proposed Exclusion
Unit/Subbasin Name	Watershed Identification Code	Watershed Name										
MIDDLE COLUMBIA/HOOD	1707010506	East Fork Hood River	H		\$580,791		\$39.43		--	--	None	--
MIDDLE COLUMBIA/HOOD	1707010507	West Fork Hood River	H		\$291,752		\$0.00		--	--	None	--
MIDDLE COLUMBIA/HOOD	1707010508	Hood River	H		\$1,320,099		\$4.40		--	--	None	--
MIDDLE COLUMBIA/HOOD	1707010511	Wind River	H		\$797,808		\$18.65		--	--	None	--
MIDDLE COLUMBIA/HOOD	1707010512	Middle Columbia/Grays Creek	L	H	\$211,237	\$197,637	\$5.14	\$3.19	--	Yes	Tributaries Only	\$197,637
MIDDLE COLUMBIA/HOOD	1707010513	Middle Columbia/Eagle Creek	M	H	\$343,609	\$338,169	\$12.27	\$10.71	--	Yes	Tributaries Only	\$338,169
LOWER COLUMBIA/SANDY	1708000101	Salmon River	H		\$417,157		\$8.89		--	--	None	--
LOWER COLUMBIA/SANDY	1708000102	Zigzag River	H		\$231,720		\$2.82		--	--	None	--
LOWER COLUMBIA/SANDY	1708000103	Upper Sandy River	H		\$181,289		\$0.00		--	--	None	--
LOWER COLUMBIA/SANDY	1708000104	Middle Sandy River	M	H	\$158,331	\$156,971	\$9.35	\$8.87	--	--	None	--
LOWER COLUMBIA/SANDY	1708000105	Bull Run River	M		\$1,903,546		\$410.45		Yes	--	Entire watershed	\$1,903,546
LOWER COLUMBIA/SANDY	1708000106	Washougal River	H		\$374,003		\$7.92		--	--	None	--
LOWER COLUMBIA/SANDY	1708000107	Columbia Gorge Tributaries	M	H	\$840,460	\$344,545	\$57.63	\$2.36	--	Yes	Tributaries Only	\$344,545
LOWER COLUMBIA/SANDY	1708000108	Lower Sandy River	M		\$178,267		\$2.75		--	--	None	--
LOWER COLUMBIA/SANDY	1708000109	Salmon Creek	M		\$3,918,463		\$13.63		Yes	--	Entire watershed	\$3,918,463
LEWIS	1708000205	East Fork Lewis River	H		\$825,934		\$16.79		--	--	None	--
LEWIS	1708000206	Lower Lewis River	H	H	\$549,672	\$145,188	\$32.31	\$0.00	--	--	None	--
LOWER COLUMBIA/CLATSKANIE	1708000301	Kalama River	H		\$574,269		\$71.16		--	--	None	--
UPPER COWLITZ	1708000401	Headwaters Cowlitz River	H		\$431,738		\$10.95		--	--	None	--
UPPER COWLITZ	1708000402	Upper Cowlitz River	H	H	\$3,262,014	\$565,959	\$13.26	\$0.00	--	--	None	--
UPPER COWLITZ	1708000403	Cowlitz Valley Frontal	H	H	\$554,664	\$502,129	\$21.68	\$5.48	--	--	None	--
UPPER COWLITZ	1708000404	Upper Cispus River	H		\$937,266		\$0.00		--	--	None	--
UPPER COWLITZ	1708000405	Lower Cispus River	H	H	\$706,699	\$665,824	\$444.40	\$0.10	--	--	None	--
COWLITZ	1708000501	Tilton River	M		\$187,398		\$23.80		--	--	None	--
COWLITZ	1708000502	Riffe Reservoir	H	H	\$669,471	\$180,641	\$32.82	\$32.47	--	--	None	--
COWLITZ	1708000503	Jackson Prairie	M	H	\$592,113	\$222,305	\$81.15	\$24.90	--	--	None	--
COWLITZ	1708000504	North Fork Toutle River	M		\$364,630		\$35,341.67		Yes	--	None [a]	--
COWLITZ	1708000505	Green River	H	H	\$113,712	\$113,712	\$0.00	\$0.00	--	--	None	--
COWLITZ	1708000506	South Fork Toutle River	M		\$50,552		\$0.00		--	--	None	--
COWLITZ	1708000507	East Willapa	H	H	\$370,319	\$224,549	\$20.24	\$9.00	--	--	None	--
COWLITZ	1708000508	Coweeman	M	H	\$394,835	\$21,205	\$12.96	\$0.70	--	--	None	--
MIDDLE WILLAMETTE	1709000704	Abernethy Creek	L		\$585,557		\$2.53		Yes	--	Entire watershed	\$585,557
CLACKAMAS	1709001101	Collawash River	H		\$575,164		\$115.20		--	--	None	--
CLACKAMAS	1709001102	Upper Clackamas River	H		\$557,390		\$0.00		--	--	None	--
CLACKAMAS	1709001103	Oak Grove Fork Clackamas River	H		\$1,187,629		\$0.00		--	--	None	--
CLACKAMAS	1709001104	Middle Clackamas River	H	H	\$2,919,200	\$765,190	\$17.44	\$0.00	--	--	None	--
CLACKAMAS	1709001105	Eagle Creek	H		\$165,156		\$7.70		--	--	None	--
CLACKAMAS	1709001106	Lower Clackamas River	H	H	\$1,022,304	\$306,492	\$5.08	\$4.15	--	--	None	--
LOWER WILLAMETTE	1709001201	Johnson Creek	H	H	\$597,547	\$213,111	\$1.73	\$0.38	--	--	None	--
LOWER WILLAMETTE	1709001202	Scappoose Creek	H	H	\$590,252	\$126,880	\$21.91	\$2.40	--	--	None	--
LOWER WILLAMETTE	1709001203	Columbia Slough/Willamette River	H	H	\$3,372,525	\$637,927	\$7.50	\$0.89	--	--	None	--
		Lower Columbia Corridor (Sandy/Washougal to Ocean)		H								

Maximum Economic Impact if all areas were designated as critical habitat	\$33,906,543
Total reduction in economic impact of proposed exclusions	\$7,287,917
Total economic impact of areas proposed for critical habitat	\$26,618,626

Footnotes:

* Blanks for the conservation value of connectivity corridors indicate that a watershed does not include a rearing and migration corridor serving occupied watersheds upstream (i.e., there are no occupied upstream watersheds).

[a] One of only two fifth-field watersheds supporting this core winter-run population.

Table A.13. Upper Willamette River *O. mykiss* ESU. Conservation-value ratings, economic impacts, and proposed exclusions for fifth-field watersheds occupied by the Upper Willamette *Oncorhynchus mykiss* Evolutionarily Significant Unit (ESU). The conservation value rating for a watershed reflects the benefit of designation for the entire watershed, or in cases where the watershed includes a connectivity corridor serving other occupied watersheds, the rating reflects the benefit of designating the tributaries only. The rating for the connectivity corridor reflects the conservation benefit of designating rearing and migration habitat. Economic impacts are reported as the total annual cost of Endangered Species Act section 7 consultations (in U.S. dollars (\$) per year), and as the per capita annual cost of consultations (in U.S. dollars (\$) per year per person). The economic impact of tributaries represents the annual total cost for a watershed less the cost associated with the connectivity corridor(s). Local economic impacts reflect the costs associated with activities geographically confined in scope, and unlikely to have regional impacts or impacts beyond the subject watershed.

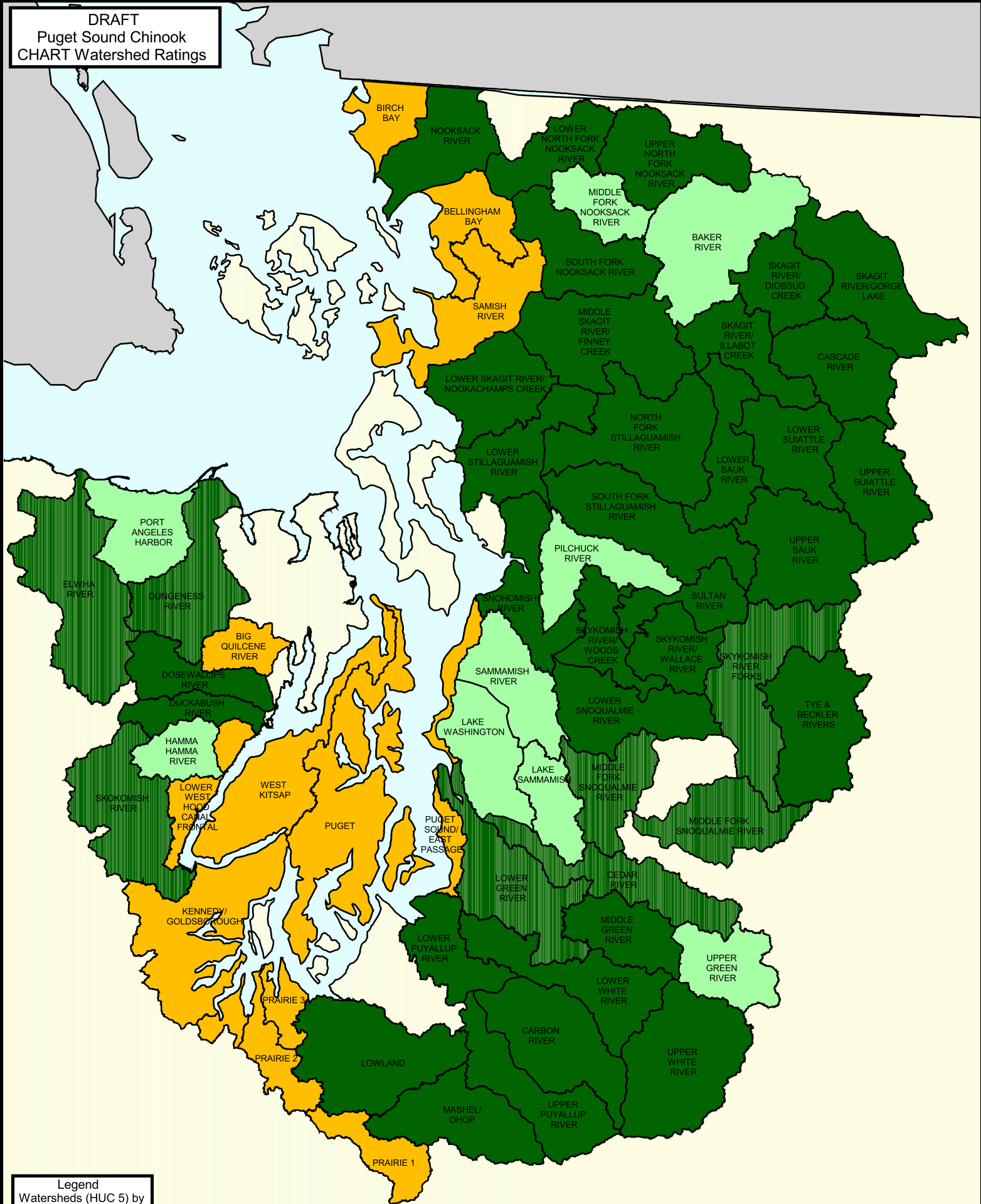
Occupied Areas			Conservation Value Ratings		Annual Total, Tributary-only, and Local per capita Economic Impacts				ESA Section 4(b)(2) Consideration of Watersheds for Exclusion from Designation as Critical Habitat			
Unit/Subbasin Name	Watershed Identification Code	Watershed Name	Benefit of designating watershed	Benefit of designating connectivity corridor *	Annual Total Impact	Annual Tributary Impact	Annual Local Impact per capita	Annual Local Tributary Impact per capita	Entire Watershed Eligible for Exclusion	Tributaries-only Eligible for Exclusion	Proposed Area for Exclusion	Reduction in Economic Impact from Proposed Exclusion
UPPER WILLAMETTE	1709000303	Calapooia River	H		\$110,336		\$0.24		--	--	None	--
UPPER WILLAMETTE	1709000304	Oak Creek	M	H	\$214,002	\$27,524	\$3.51	\$0.00	--	--	None	--
UPPER WILLAMETTE	1709000306	Luckiamute River	M		\$160,430		\$18.13		--	--	None	--
NORTH SANTIAM	1709000504	Middle North Santiam River	H		\$56,486		\$4.61		--	--	None	--
NORTH SANTIAM	1709000505	Little North Santiam River	H		\$290,765		\$0.00		--	--	None	--
NORTH SANTIAM	1709000506	Lower North Santiam River	H	H	\$119,919	\$29,218	\$6.93	\$1.58	--	--	None	--
SOUTH SANTIAM	1709000601	Hamilton Creek/South Santiam River	H	H	\$128,131	\$91,575	\$2.60	\$0.88	--	--	None	--
SOUTH SANTIAM	1709000602	Crabtree Creek	H		\$115,915		\$0.43		--	--	None	--
SOUTH SANTIAM	1709000603	Thomas Creek	H		\$90,510		\$3.84		--	--	None	--
SOUTH SANTIAM	1709000606	South Santiam River	H		\$412,878		\$52.31		--	--	None	--
SOUTH SANTIAM	1709000607	South Santiam River/Foster Reservoir	H	H	\$4,019	\$2,659	\$2.29	\$0.00	--	--	None	--
SOUTH SANTIAM	1709000608	Wiley Creek	H		\$31,478		\$20.95		--	--	None	--
MIDDLE WILLAMETTE	1709000701	Mill Creek/Willamette River	L	H	\$695,124	\$72,889	\$14.32	\$1.00	--	--	None	--
MIDDLE WILLAMETTE	1709000702	Rickreall Creek	L	H	\$261,628	\$235,870	\$6.35	\$5.27	--	Yes	Tributaries Only	\$235,870
MIDDLE WILLAMETTE	1709000703	Willamette River/Chehalem Creek	L	H	\$365,887	\$247,595	\$1.80	\$0.89	--	Yes	Tributaries Only	\$247,595
MIDDLE WILLAMETTE	1709000704	Abernethy Creek	L	H	\$585,557	\$196,701	\$2.53	\$1.30	--	Yes	Tributaries Only	\$196,701
YAMHILL	1709000801	Upper South Yamhill River	M		\$162,287		\$19.84		--	--	None	--
YAMHILL	1709000802	Willamina Creek	L		\$110,764		\$2.31		Yes	--	Entire watershed	\$110,764
YAMHILL	1709000803	Mill Creek/South Yamhill River	L		\$84,755		\$13.84		--	--	None	--
YAMHILL	1709000804	Lower South Yamhill River	L	M	\$85,193	\$43,374	\$9.21	\$3.83	--	--	None	--
YAMHILL	1709000805	Salt Creek/South Yamhill River	L		\$175,103		\$40.22		Yes	--	Entire watershed	\$175,103
YAMHILL	1709000806	North Yamhill River	L		\$276,770		\$19.60		Yes	--	Entire watershed	\$276,770
YAMHILL	1709000807	Yamhill River	L	M	\$131,653	\$94,506	\$4.07	\$2.62	--	Yes	Tributaries Only	\$94,506
MOLALLA/PUDDING	1709000901	Abiqua Creek/Pudding River	L		\$773,586		\$13.75		Yes	--	Entire watershed	\$773,586
MOLALLA/PUDDING	1709000902	Butte Creek/Pudding River	M	M	\$81,165	\$64,928	\$6.80	\$4.92	--	--	None	--
MOLALLA/PUDDING	1709000903	Rock Creek/Pudding River	M		\$91,457		\$7.73		--	--	None	--
MOLALLA/PUDDING	1709000904	Senecal Creek/Mill Creek	L	M	\$85,852	\$73,612	\$3.07	\$2.28	--	--	None	--
MOLALLA/PUDDING	1709000905	Upper Molalla River	H		\$221,513		\$0.60		--	--	None	--
MOLALLA/PUDDING	1709000906	Lower Molalla River	M	H	\$111,254	\$107,174	\$4.62	\$4.20	--	--	None	--
TUALATIN	1709001001	Dairy Creek	L		\$207,789		\$3.22		Yes	--	Entire watershed	\$207,789
TUALATIN	1709001002	Gales Creek	M	M	\$141,625	\$125,387	\$6.64	\$5.54	--	--	None	--
TUALATIN	1709001003	Scoggins Creek	L		\$282,688		\$45.79		Yes	--	Entire watershed	\$282,688
TUALATIN	1709001004	Rock Creek/Tualatin River	L	M	\$315,271	\$262,591	\$0.91	\$0.51	Yes	--	Entire watershed	\$315,271
TUALATIN	1709001005	Lower Tualatin River	L	M	\$595,319	\$215,385	\$2.93	\$0.71	Yes	--	Entire watershed	\$595,319
LOWER WILLAMETTE	1709001201	Johnson Creek		H	\$384,436		\$1.73		--	--	None	--
LOWER WILLAMETTE	1709001202	Scappoose Creek		H	\$463,372		\$21.91		--	--	None	--
LOWER WILLAMETTE	1709001203	Columbia Slough/Willamette River		H	\$2,734,598		\$7.50		--	--	None	--
Lower Columbia Corridor (Willamette to Ocean)												

Maximum Economic Impact if all areas were designated as critical habitat	\$11,159,514
Total reduction in economic impact of proposed exclusions	\$3,511,962
Total economic impact of areas proposed for critical habitat	\$7,647,553

Footnotes:

* Blanks for the conservation value of connectivity corridors indicate that a watershed does not include a rearing and migration corridor serving occupied watersheds upstream (i.e., there are no occupied upstream watersheds).

DRAFT
Puget Sound Chinook
CHART Watershed Ratings



Legend
Watersheds (HUC 5) by
CHART Rates

- High
- Medium
- Low

Figure A.1(a). Map of the fifth-field watersheds occupied by the Puget Sound chinook Evolutionarily Significant Unit (ESU) and eligible for designation as critical habitat.

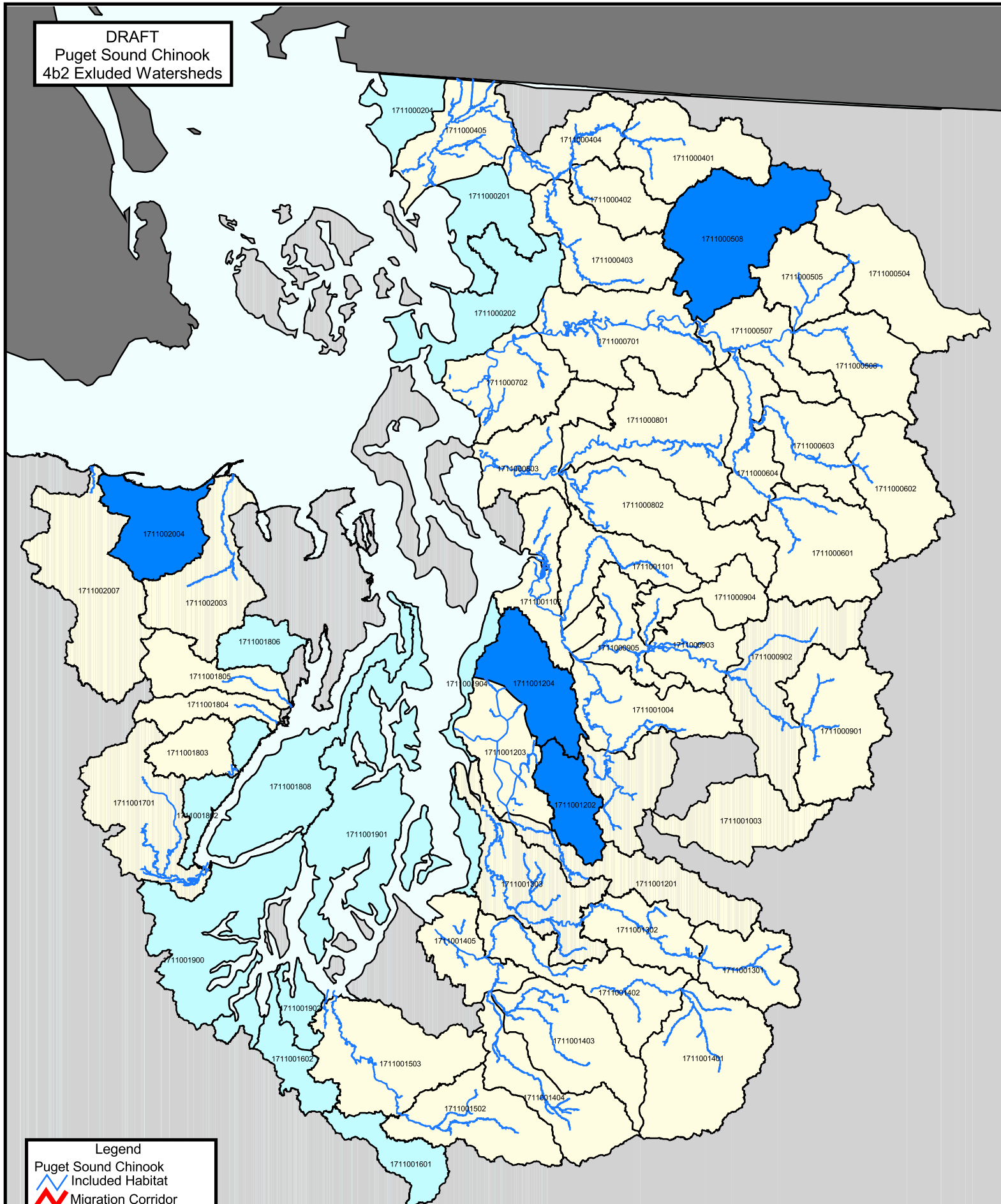
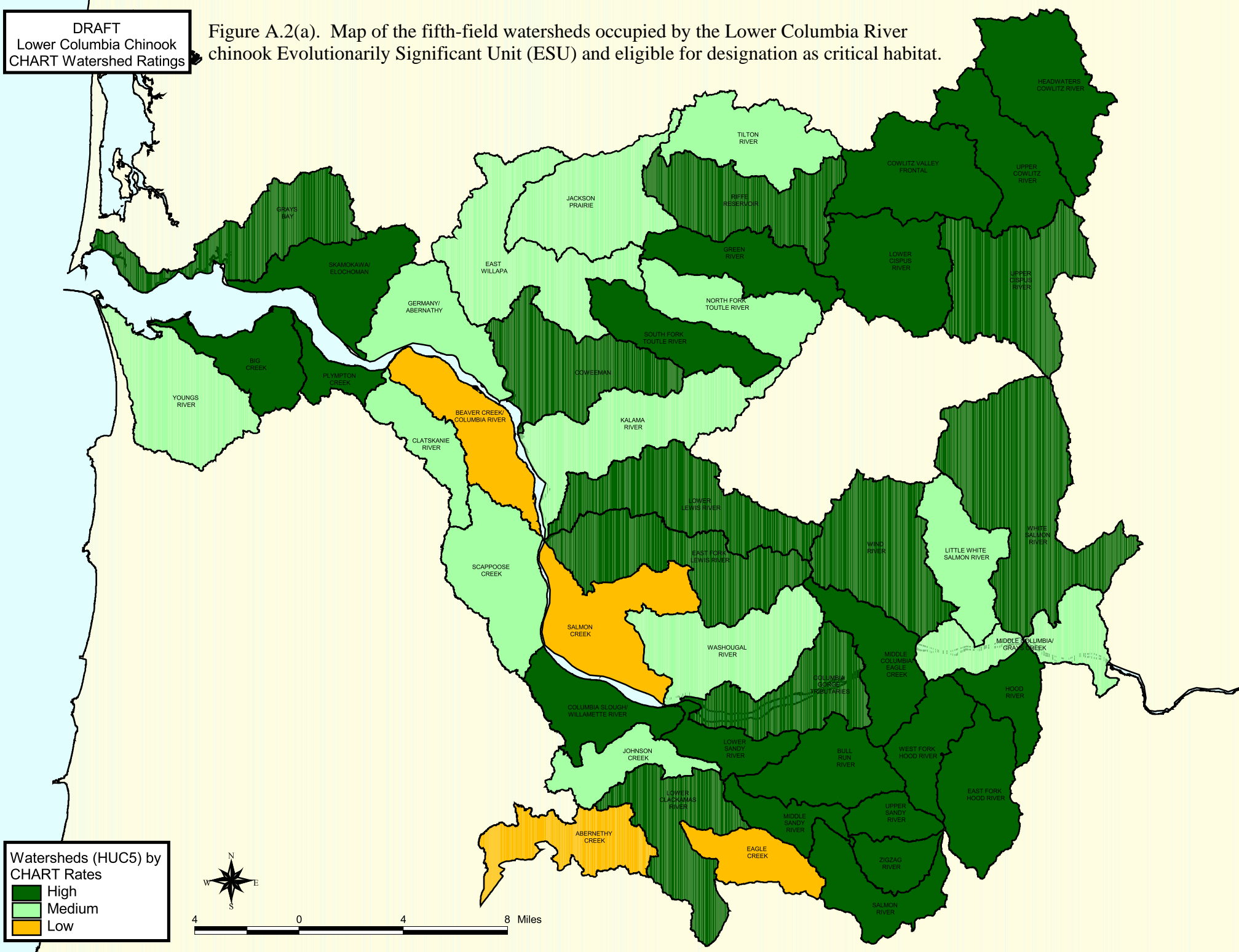


Figure A.1(b). Map of the fifth-field watersheds occupied by the Puget Sound chinook Evolutionarily Significant Unit (ESU), illustrating those areas being recommended for exclusion from critical habitat designation.

DRAFT Lower Columbia Chinook CHART Watershed Ratings

Figure A.2(a). Map of the fifth-field watersheds occupied by the Lower Columbia River chinook Evolutionarily Significant Unit (ESU) and eligible for designation as critical habitat.



DRAFT
Lower Columbia Chinook
4b2 Excluded Watersheds

Figure A.2(b). Map of the fifth-field watersheds occupied by the Lower Columbia River chinook Evolutionarily Significant Unit (ESU), illustrating those areas being recommended for exclusion from designation as critical habitat.

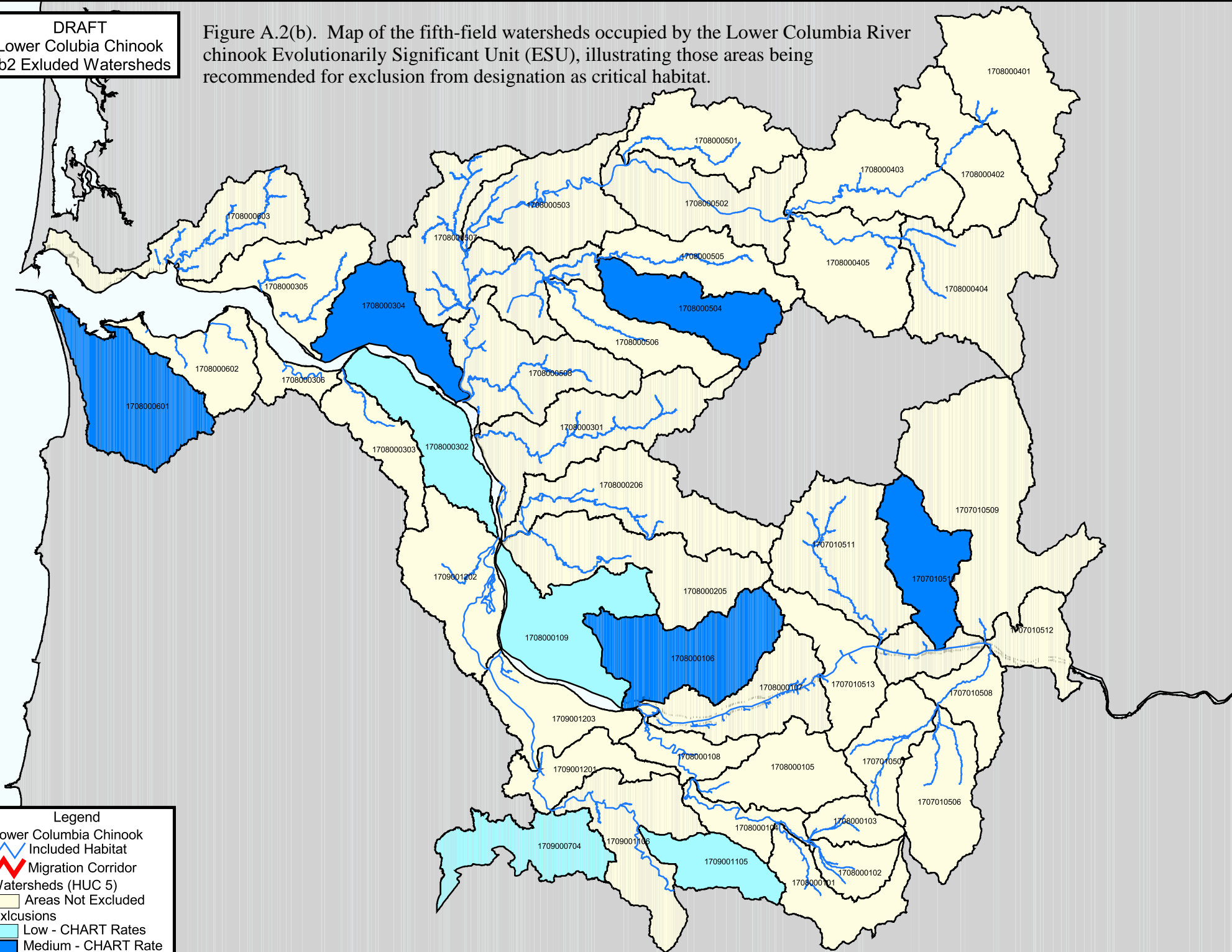
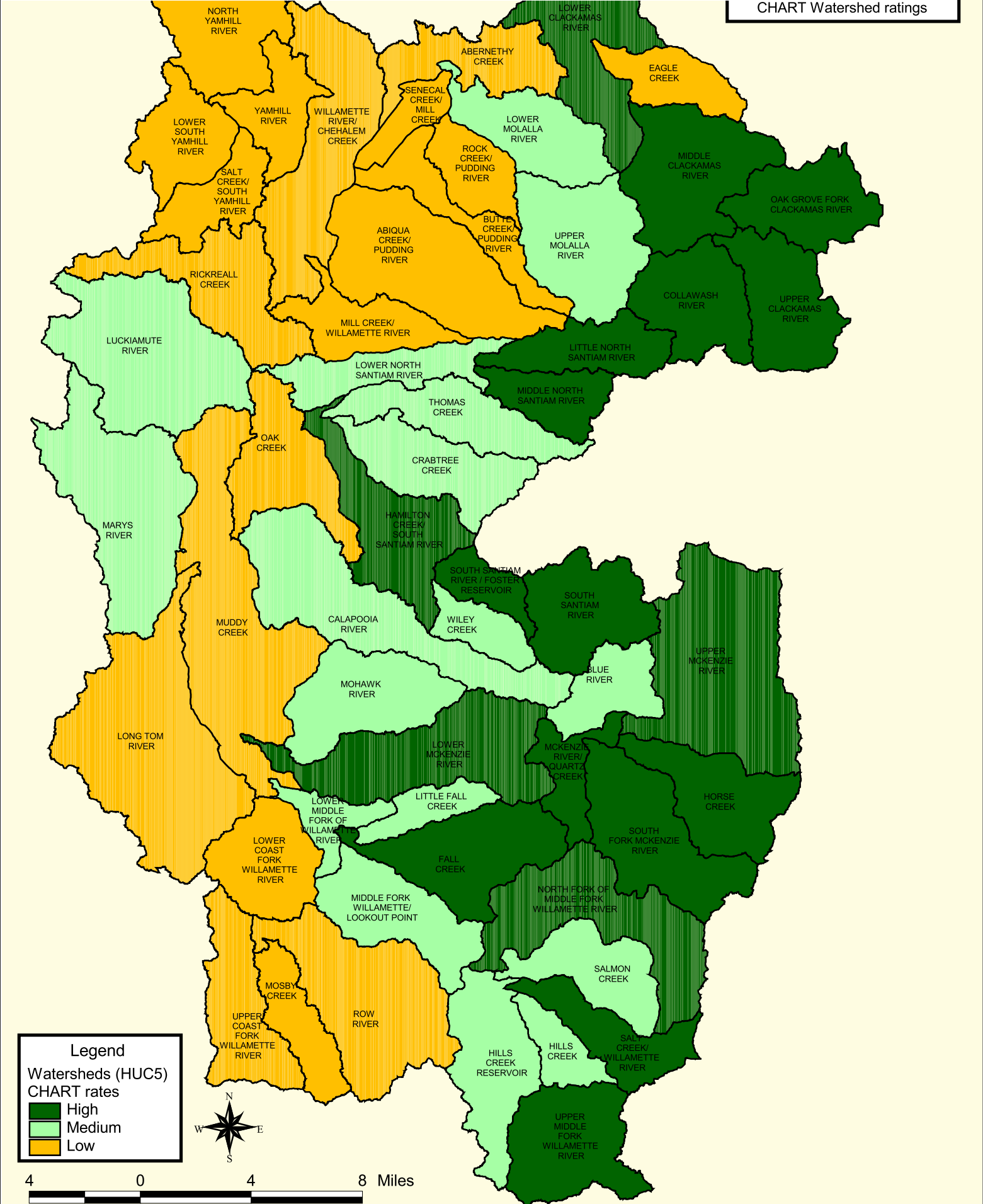


Figure A.3(a). Map of the fifth-field watersheds occupied by the Upper Willamette River chinook Evolutionarily Significant Unit (ESU) and eligible for designation as critical habitat.

DRAFT
Upper Willamette Spring Chinook
CHART Watershed ratings



DRAFT
Upper Willamette Chinook
4b2 Excluded Watersheds

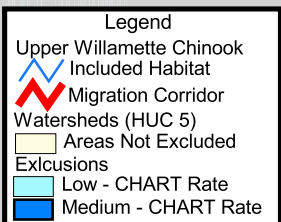
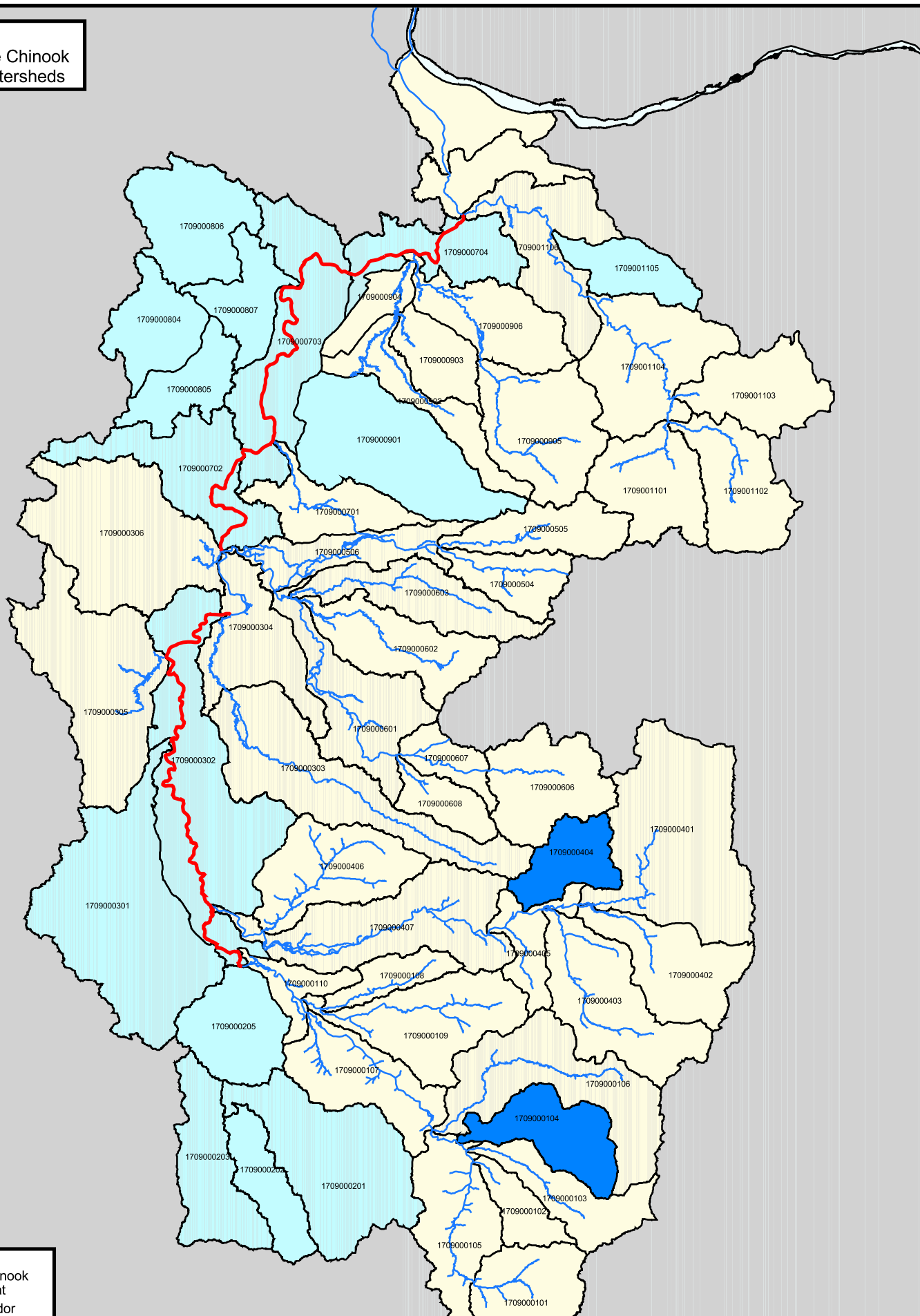


Figure A.3(b). Map of the fifth-field watersheds occupied by the Upper Willamette River chinook Evolutionarily Significant Unit (ESU), illustrating those areas being recommended for exclusion from designation as critical habitat.

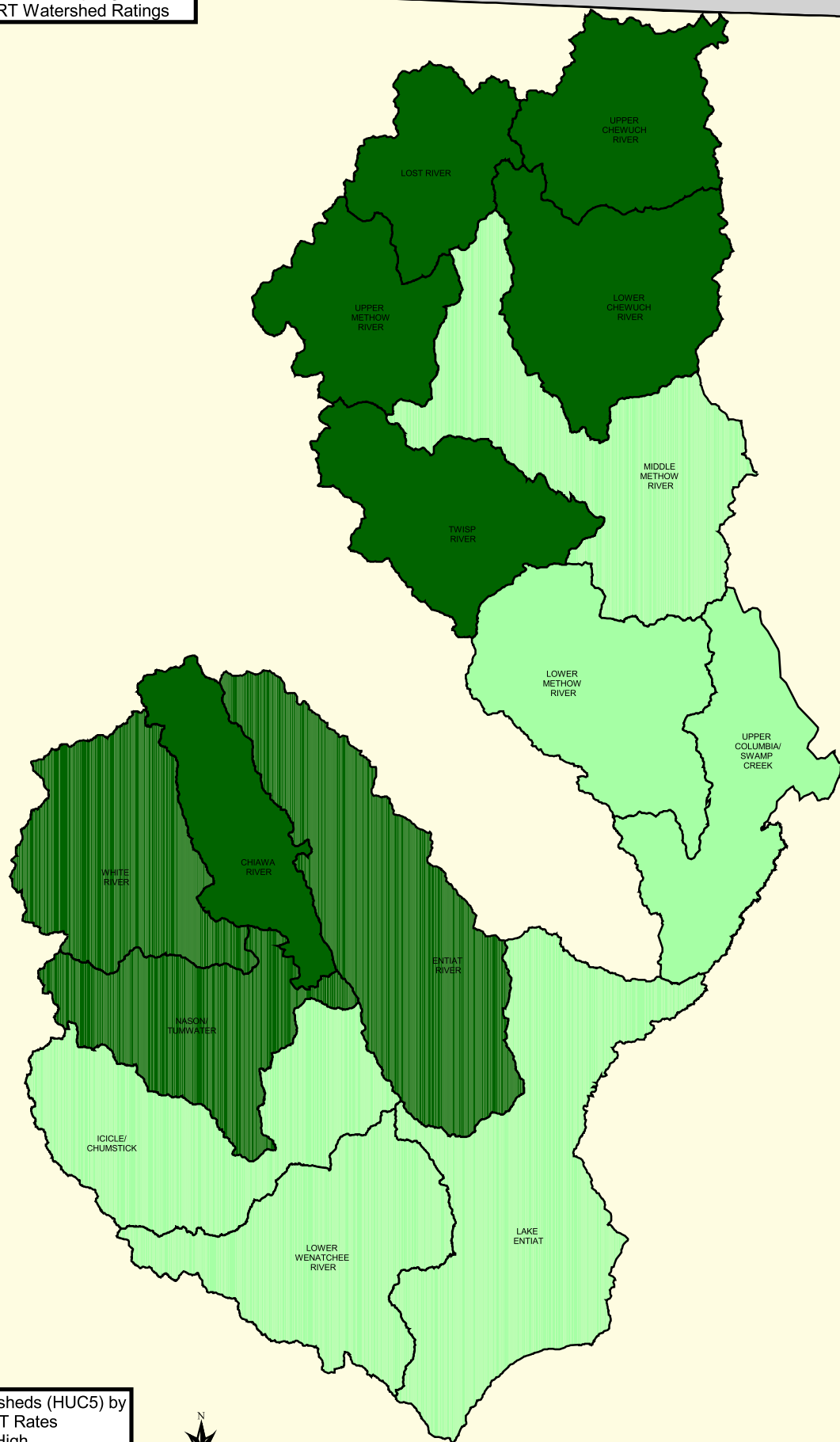
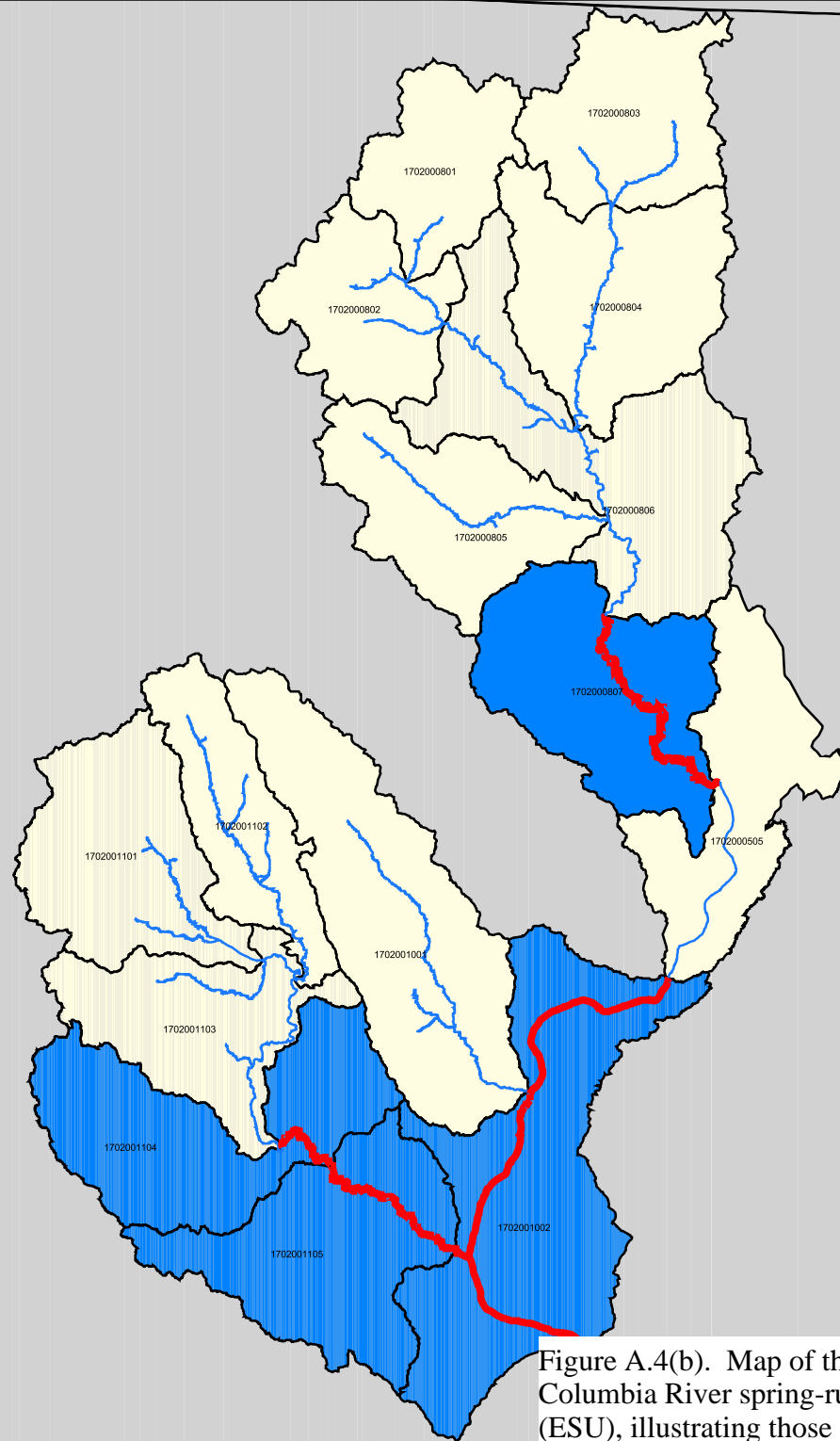


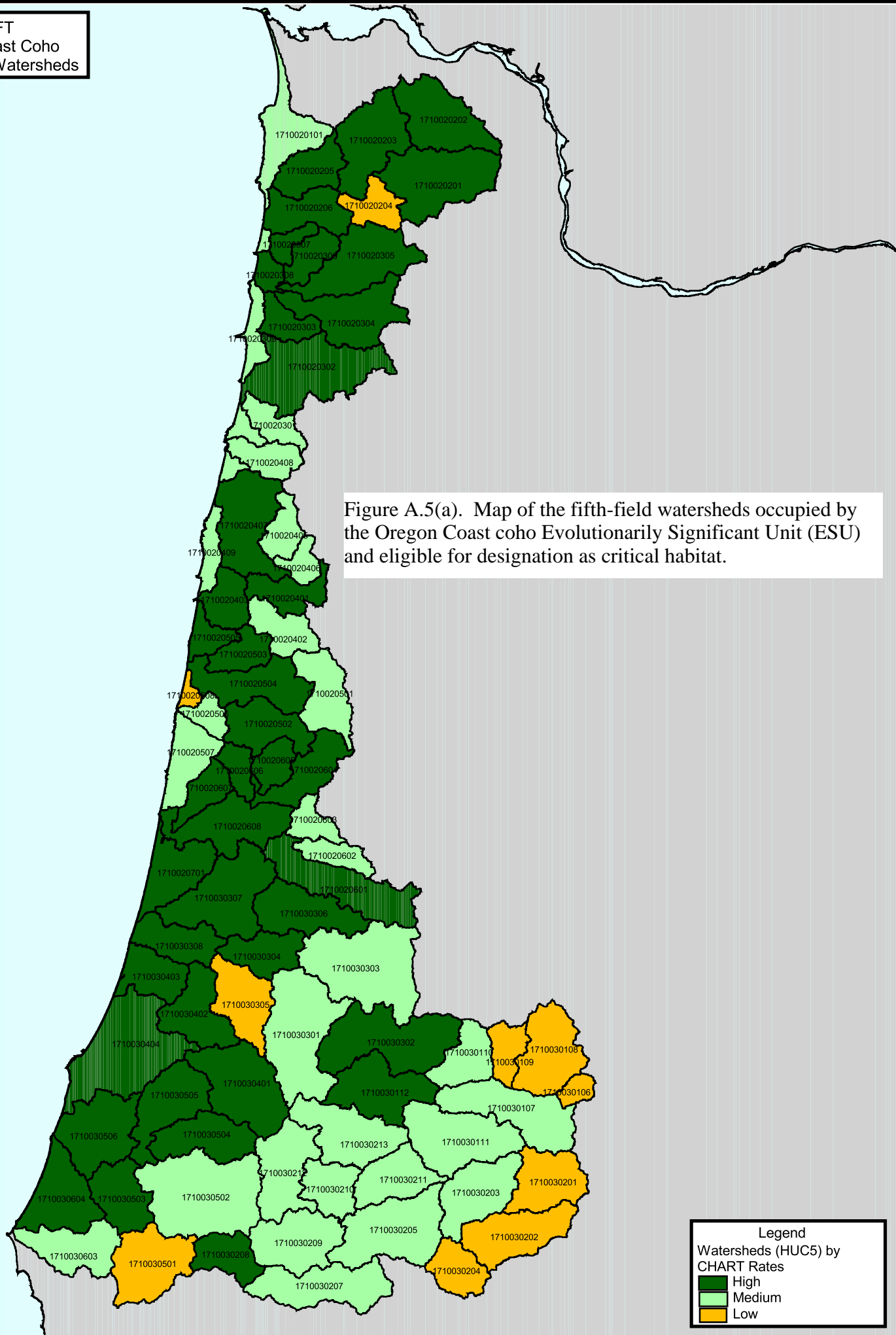
Figure A.4(a). Map of the fifth-field watersheds occupied by the Upper Columbia River spring-run chinook Evolutionarily Significant Unit (ESU) and eligible for designation as critical habitat.

DRAFT
Upper Columbia Chinook
4b2 Excluded Watersheds



Legend
Upper Columbia Chinook
Included Habitat
Migration Corridor
Watersheds (HUC 5)
Areas Not Excluded
Exclusions
Low - CHART Rates
Medium - CHART Rate

Figure A.4(b). Map of the fifth-field watersheds occupied by the Upper Columbia River spring-run chinook Evolutionarily Significant Unit (ESU), illustrating those areas being recommended for exclusion from designation as critical habitat.



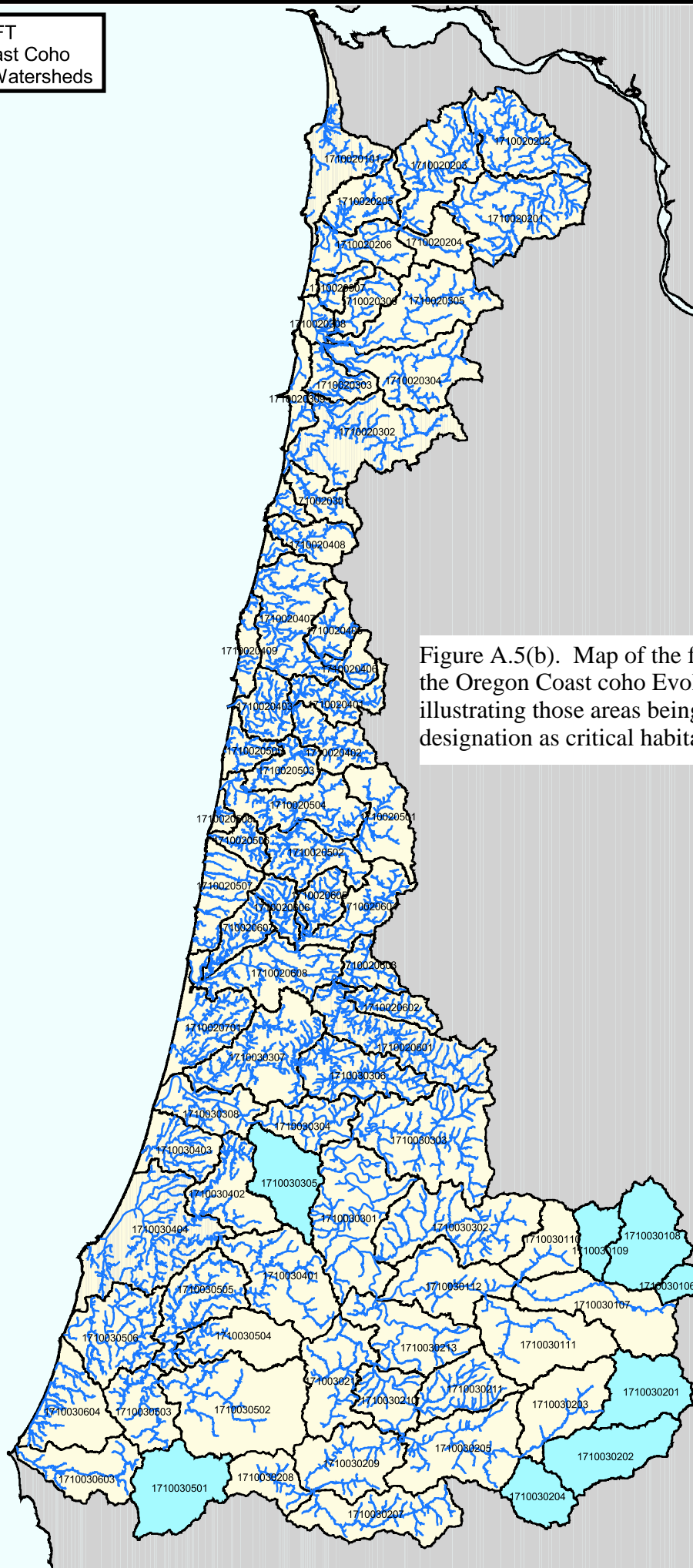
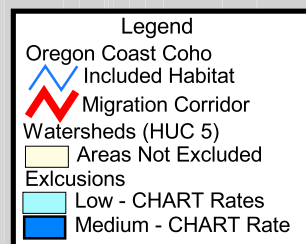


Figure A.5(b). Map of the fifth-field watersheds occupied by the Oregon Coast coho Evolutionarily Significant Unit (ESU), illustrating those areas being recommended for exclusion from designation as critical habitat.



DRAFT
Hood Canal Summer Chum
CHART Watershed Ratings

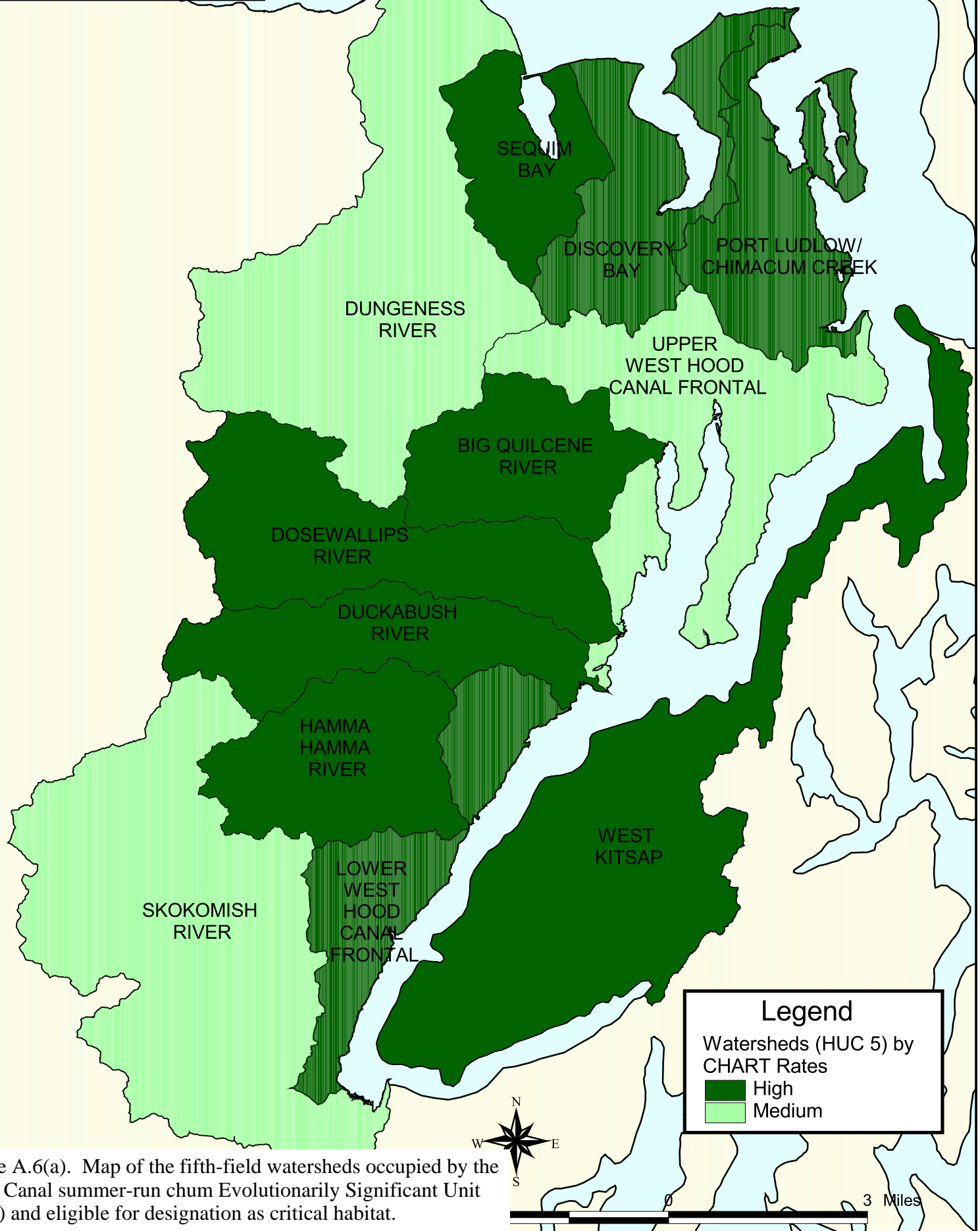
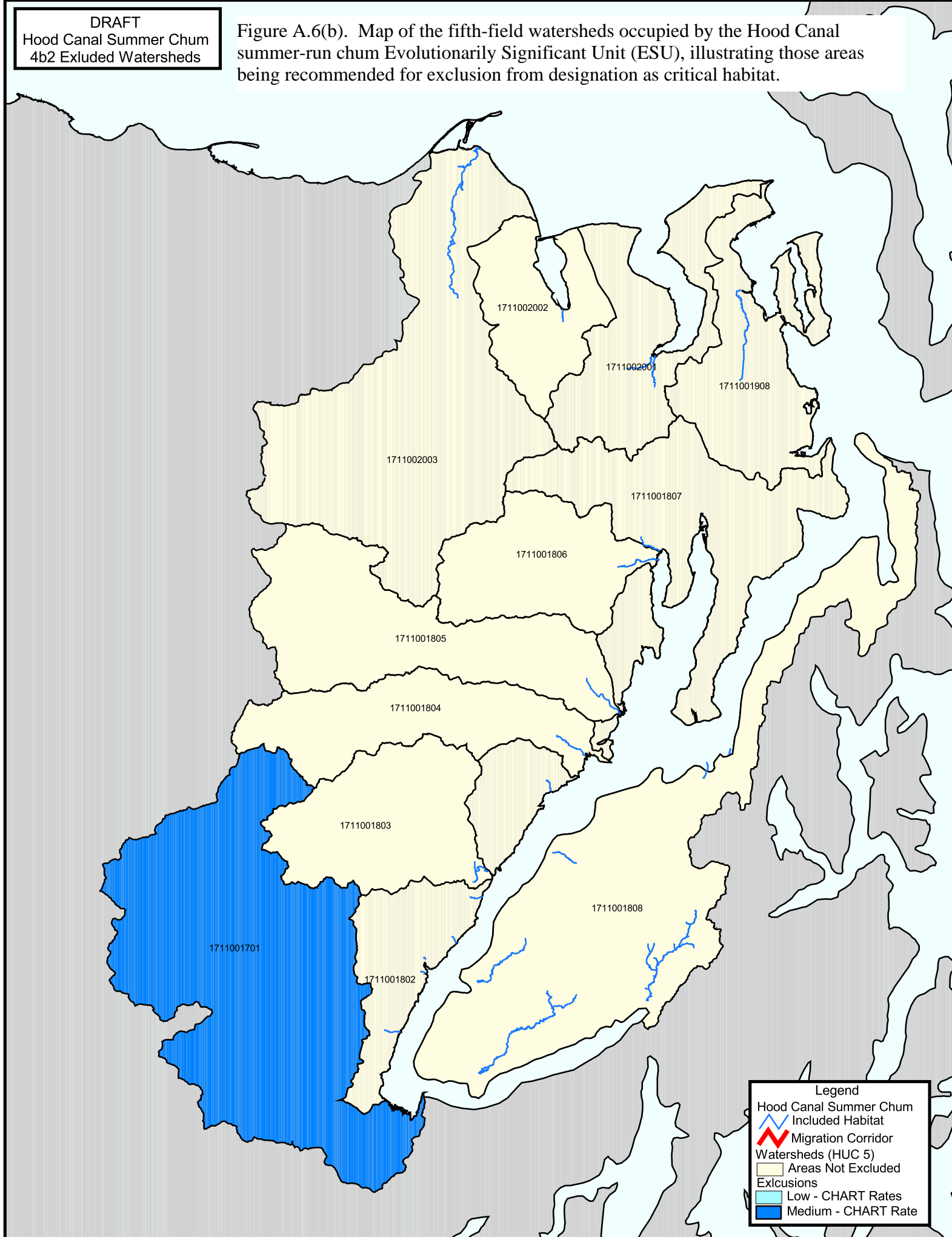


Figure A.6(a). Map of the fifth-field watersheds occupied by the Hood Canal summer-run chum Evolutionarily Significant Unit (ESU) and eligible for designation as critical habitat.

Figure A.6(b). Map of the fifth-field watersheds occupied by the Hood Canal summer-run chum Evolutionarily Significant Unit (ESU), illustrating those areas being recommended for exclusion from designation as critical habitat.



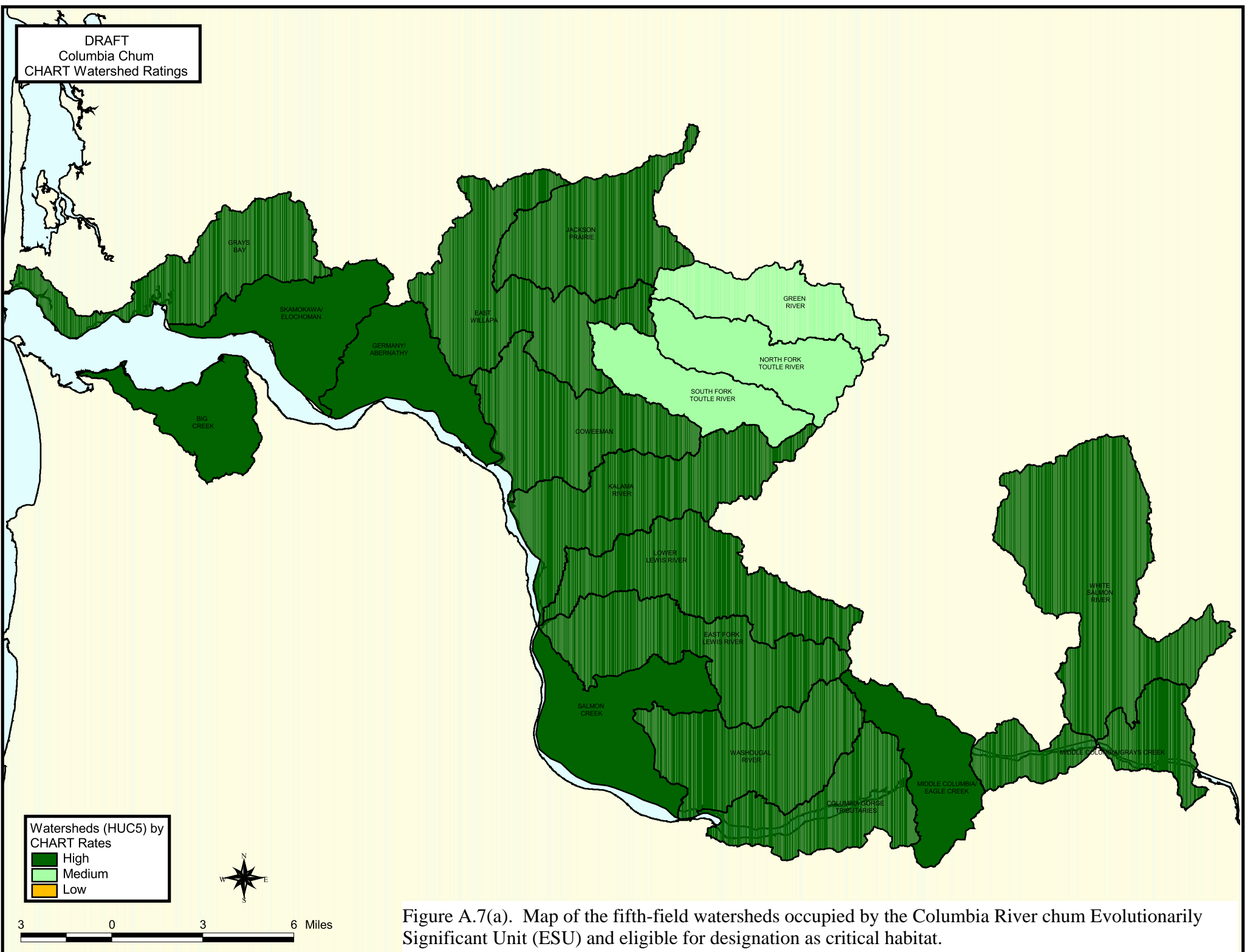


Figure A.7(a). Map of the fifth-field watersheds occupied by the Columbia River chum Evolutionarily Significant Unit (ESU) and eligible for designation as critical habitat.

DRAFT
Columbia Chum
4b2 Exluded Watersheds

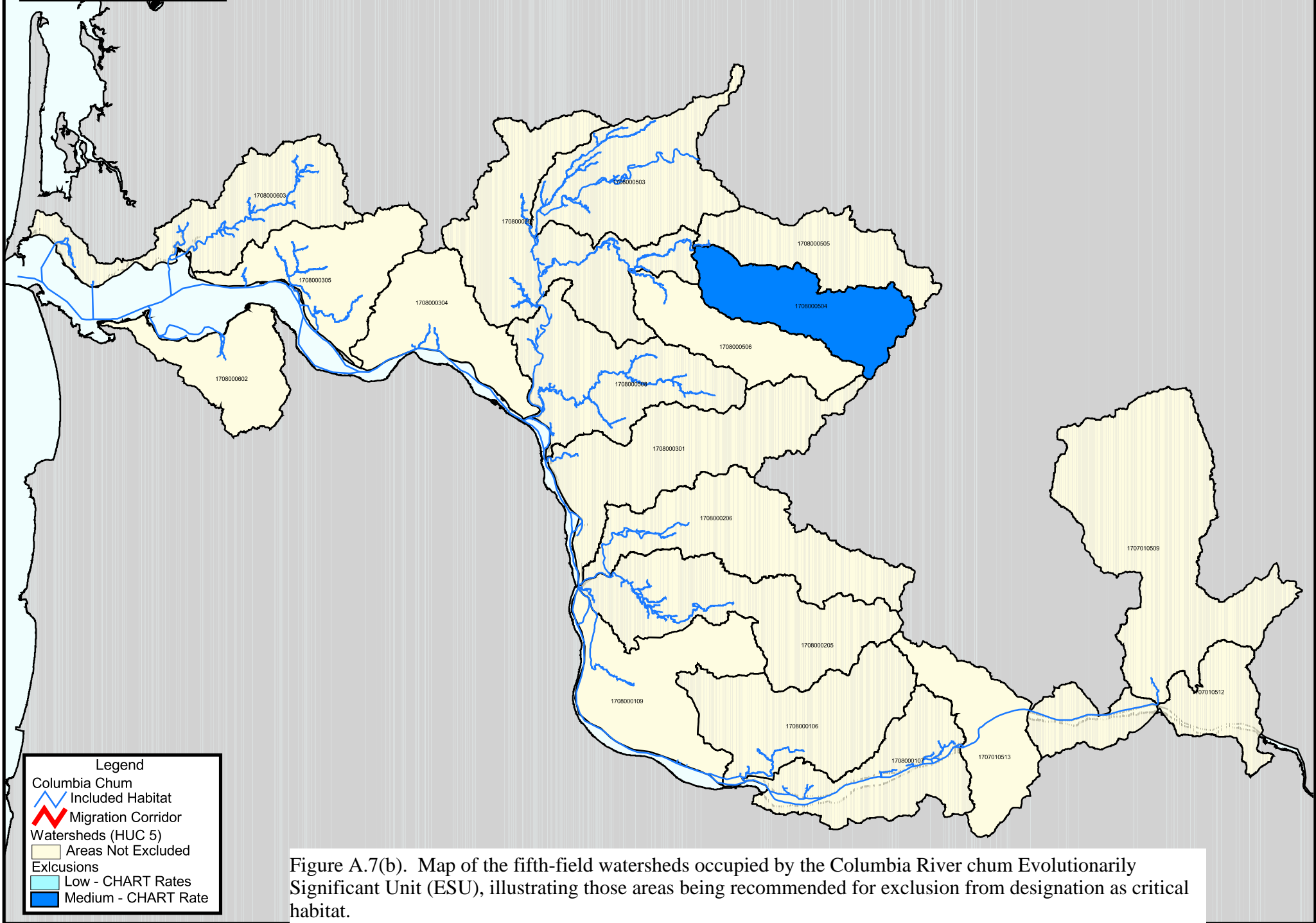
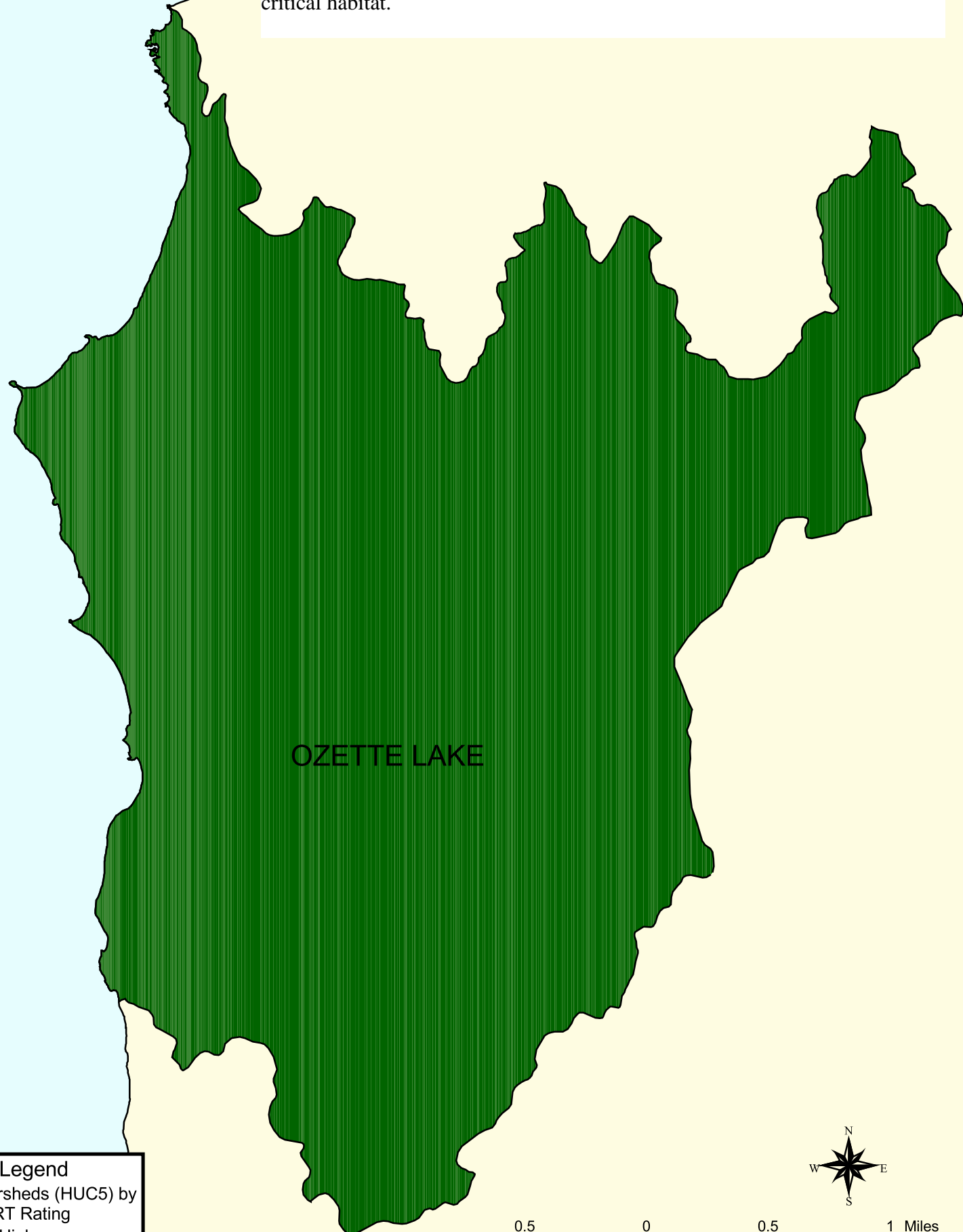


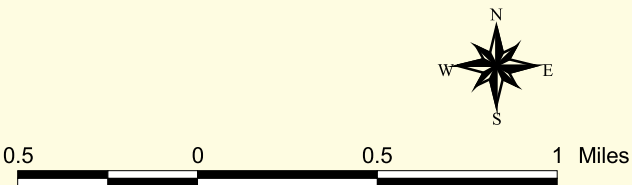
Figure A.7(b). Map of the fifth-field watersheds occupied by the Columbia River chum Evolutionarily Significant Unit (ESU), illustrating those areas being recommended for exclusion from designation as critical habitat.

DRAFT
Ozette Lake Sockeye
CHART Watershed Rating

Figure A.8(a). Map of the fifth-field watersheds occupied by the Ozette Lake sockeye Evolutionarily Significant Unit (ESU) and eligible for designation as critical habitat.



Legend
Watersheds (HUC5) by
CHART Rating
■ High



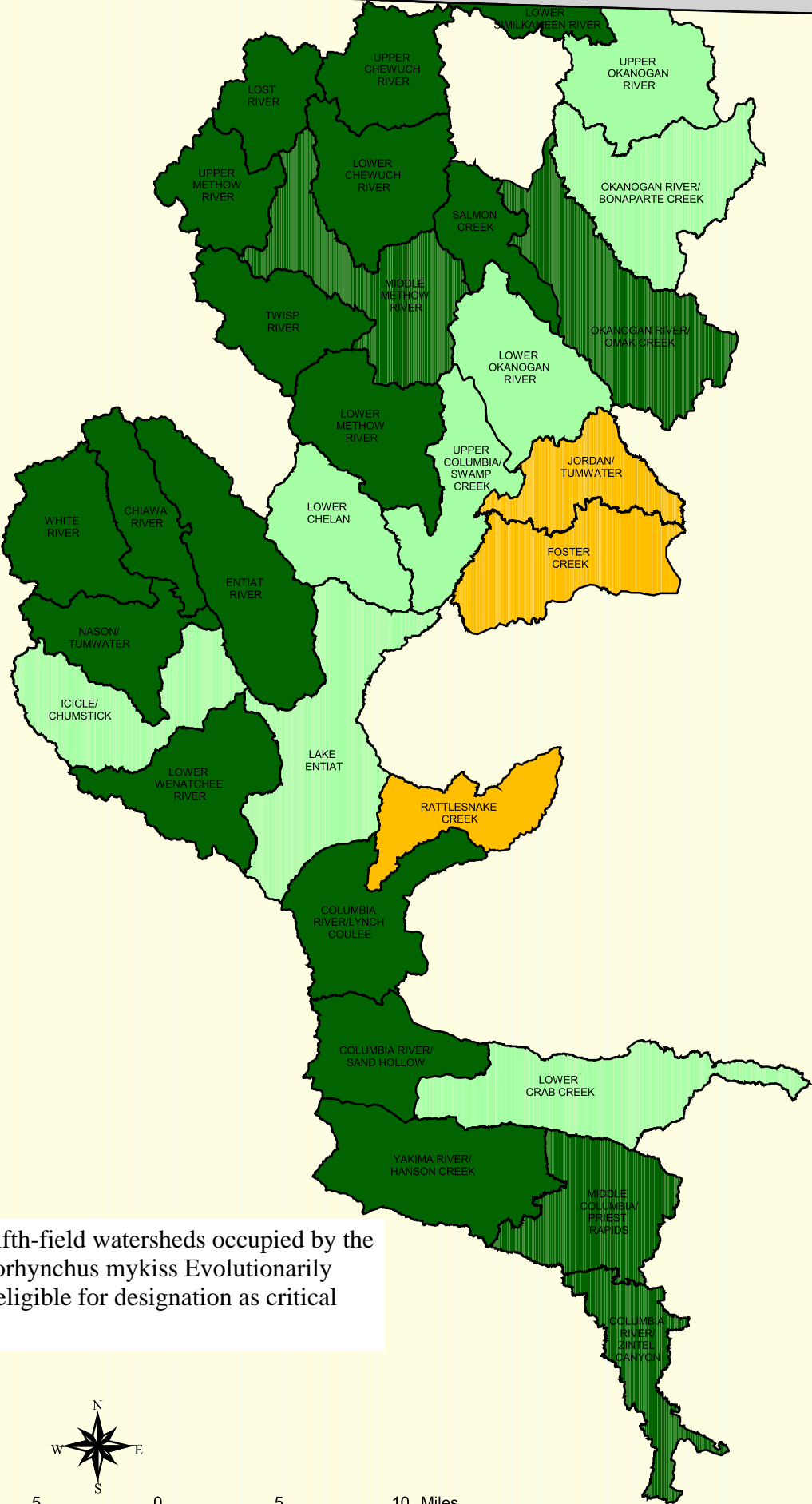
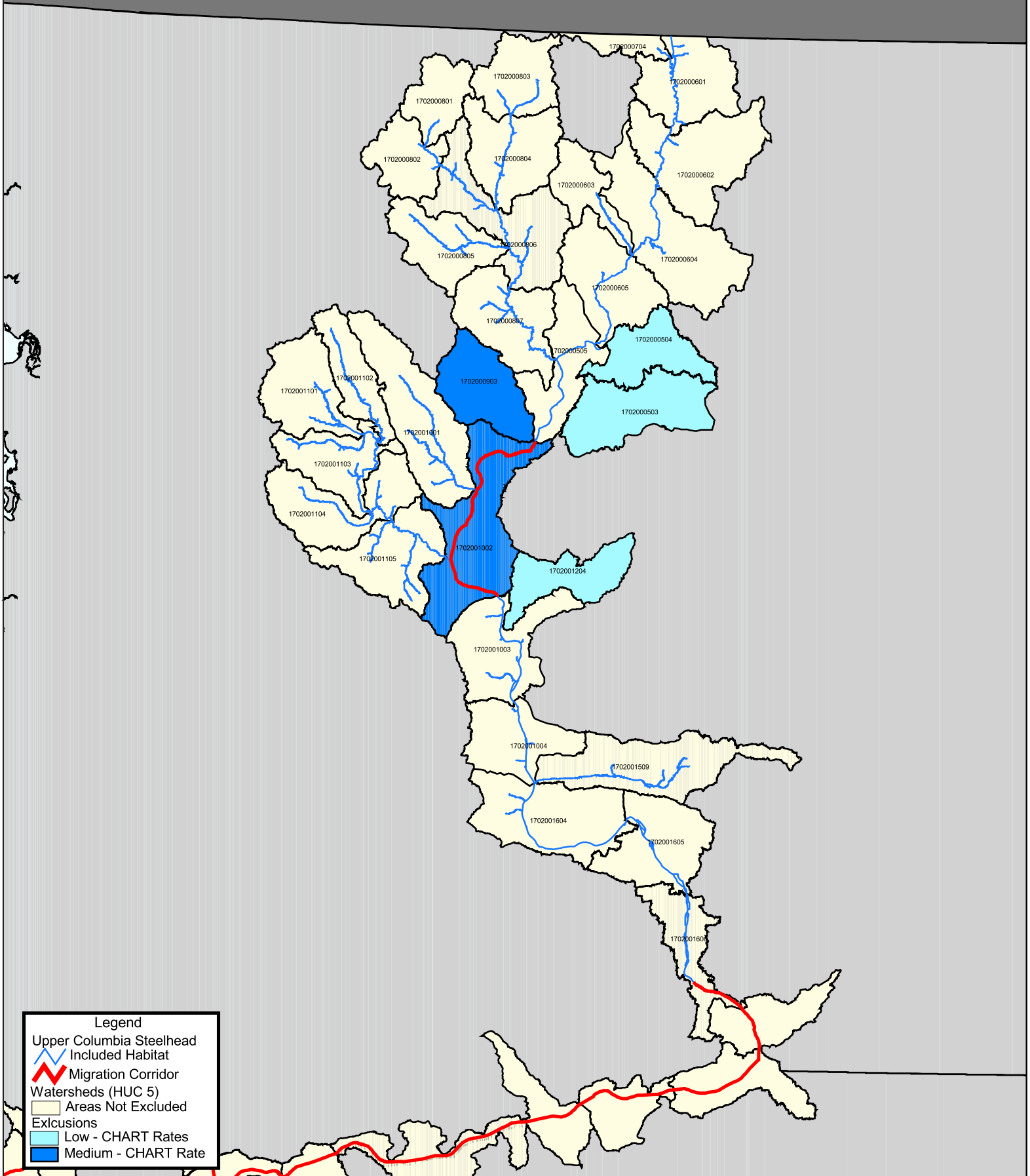
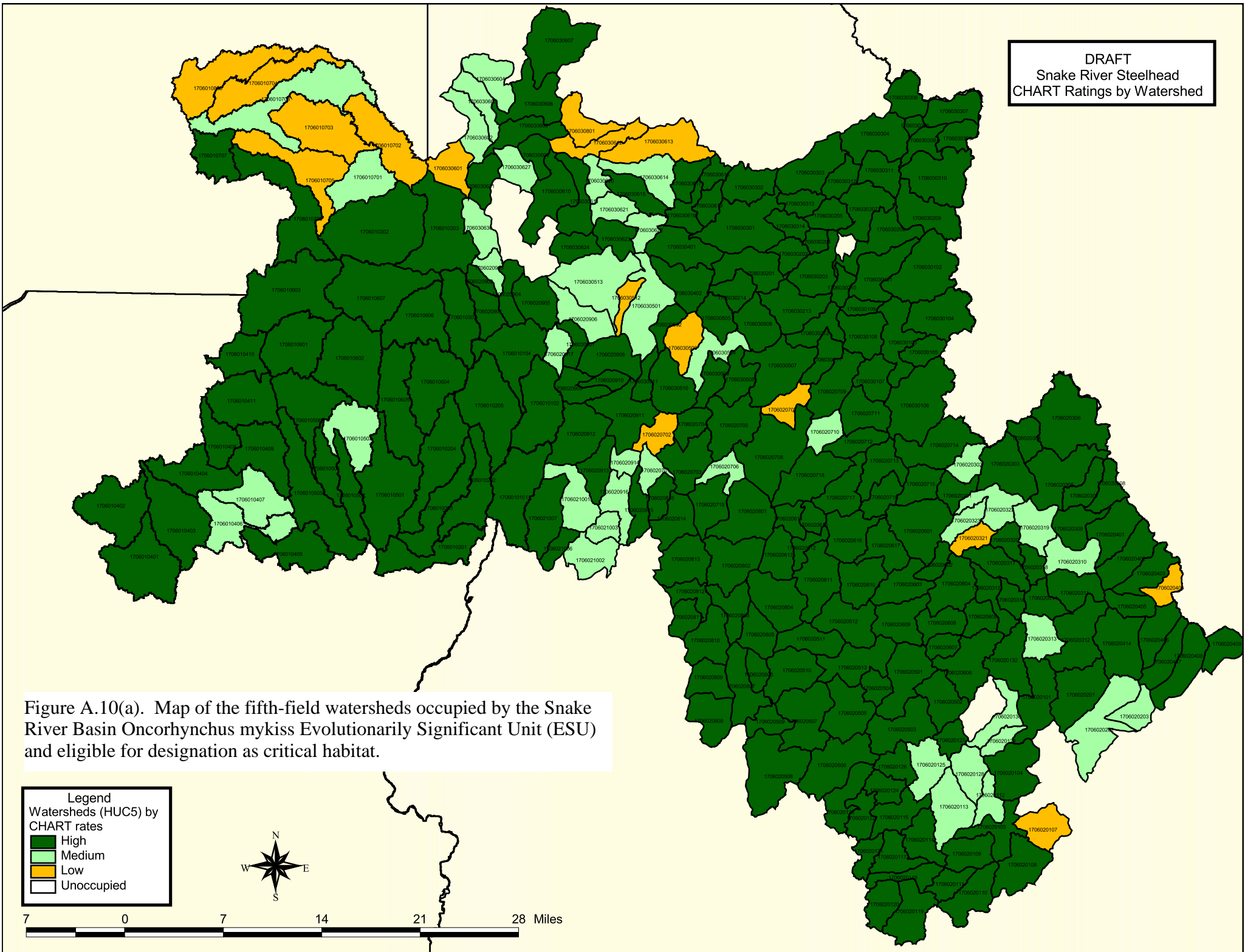
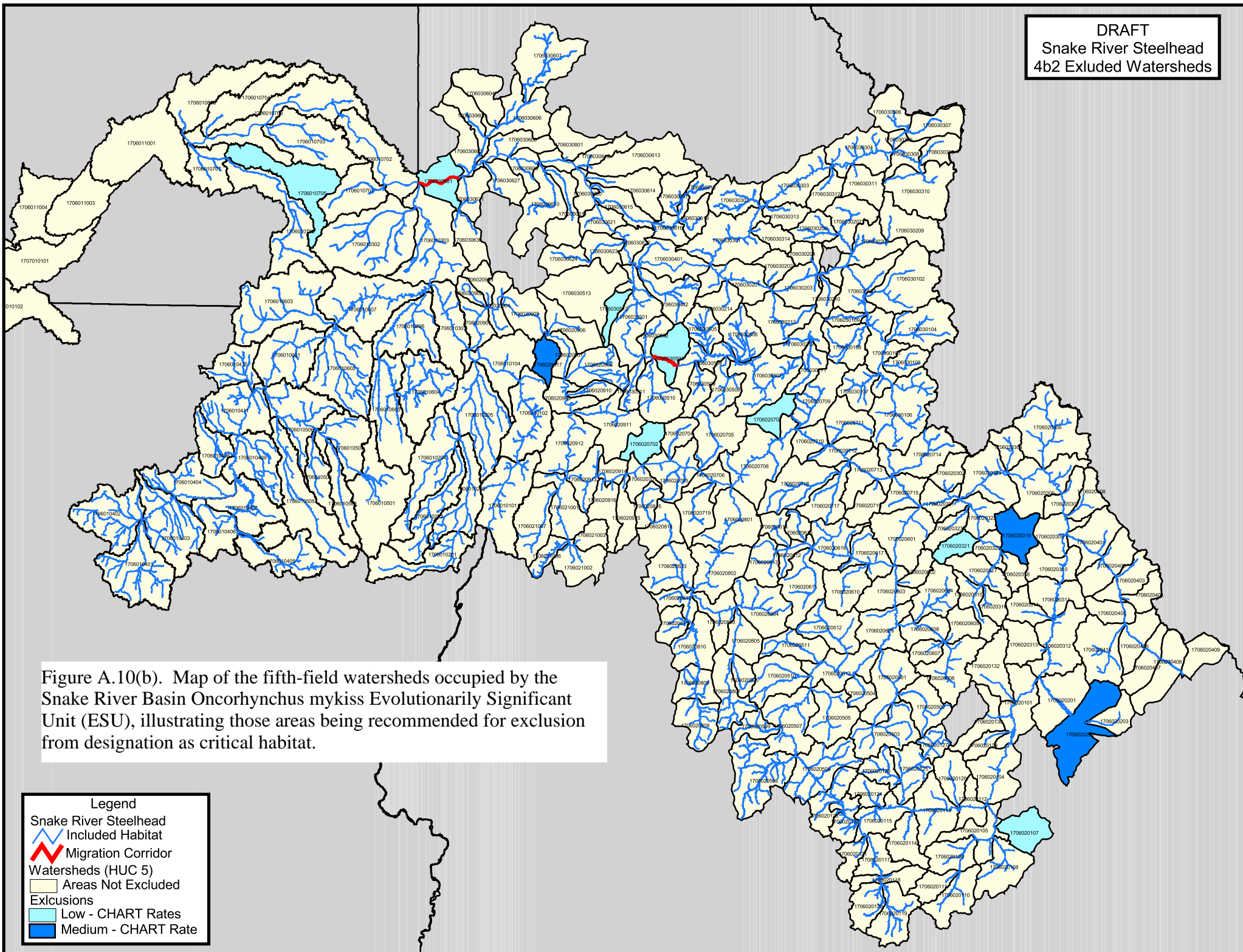


Figure A.9(a). Map of the fifth-field watersheds occupied by the Upper Columbia River *Oncorhynchus mykiss* Evolutionarily Significant Unit (ESU) and eligible for designation as critical habitat.

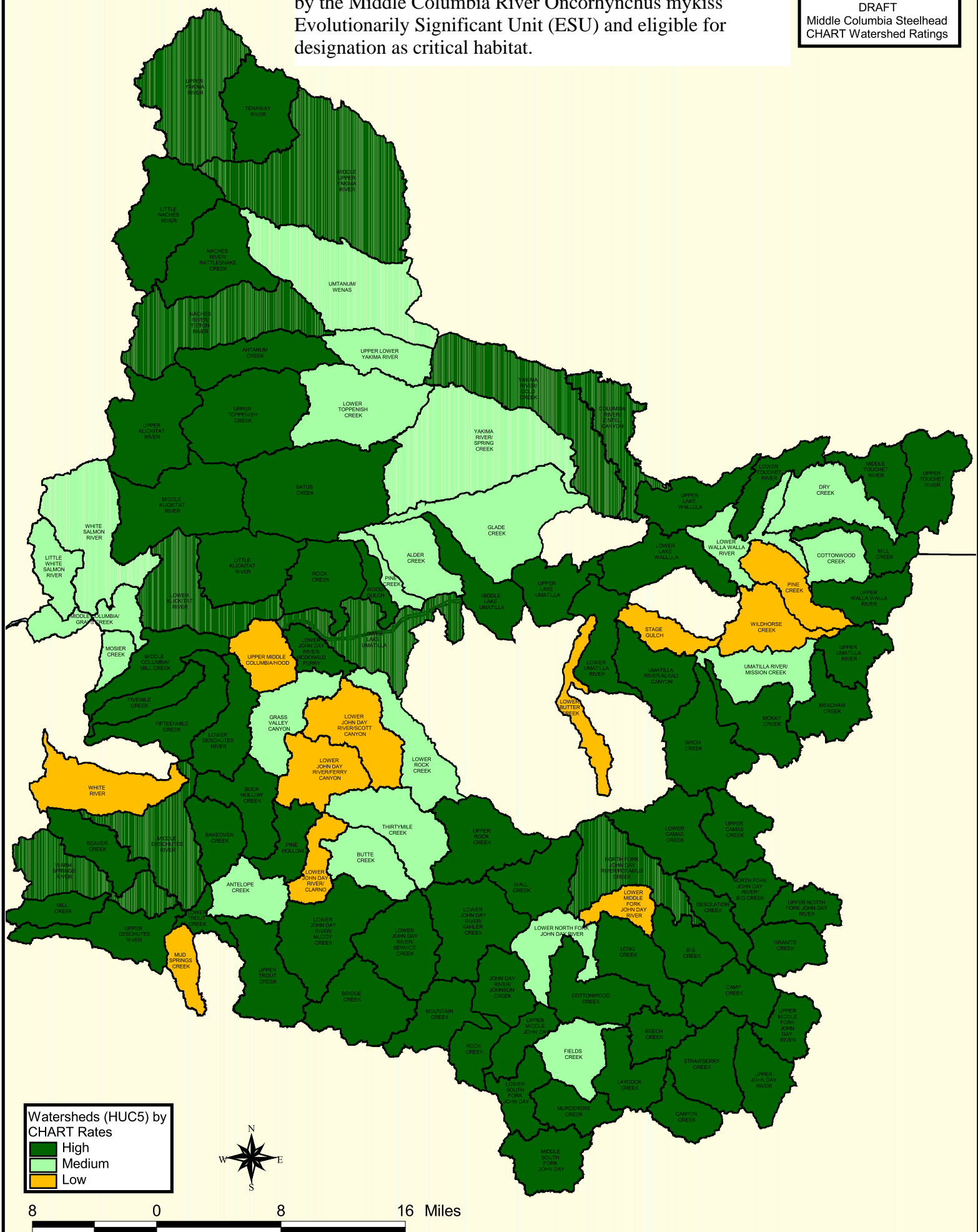
Figure A.9(b). Map of the fifth-field watersheds occupied by the Upper Columbia River *Oncorhynchus mykiss* Evolutionarily Significant Unit (ESU), illustrating those areas being recommended for exclusion from designation as critical habitat.







DRAFT
Middle Columbia Steelhead
CHART Watershed Ratings



DRAFT
Middle Columbia Steelhead
4b2 Excluded Watersheds

Figure A.11(b). Map of the fifth-field watersheds occupied by the Middle Columbia River *Oncorhynchus mykiss* Evolutionarily Significant Unit (ESU), illustrating those areas being recommended for exclusion from designation as

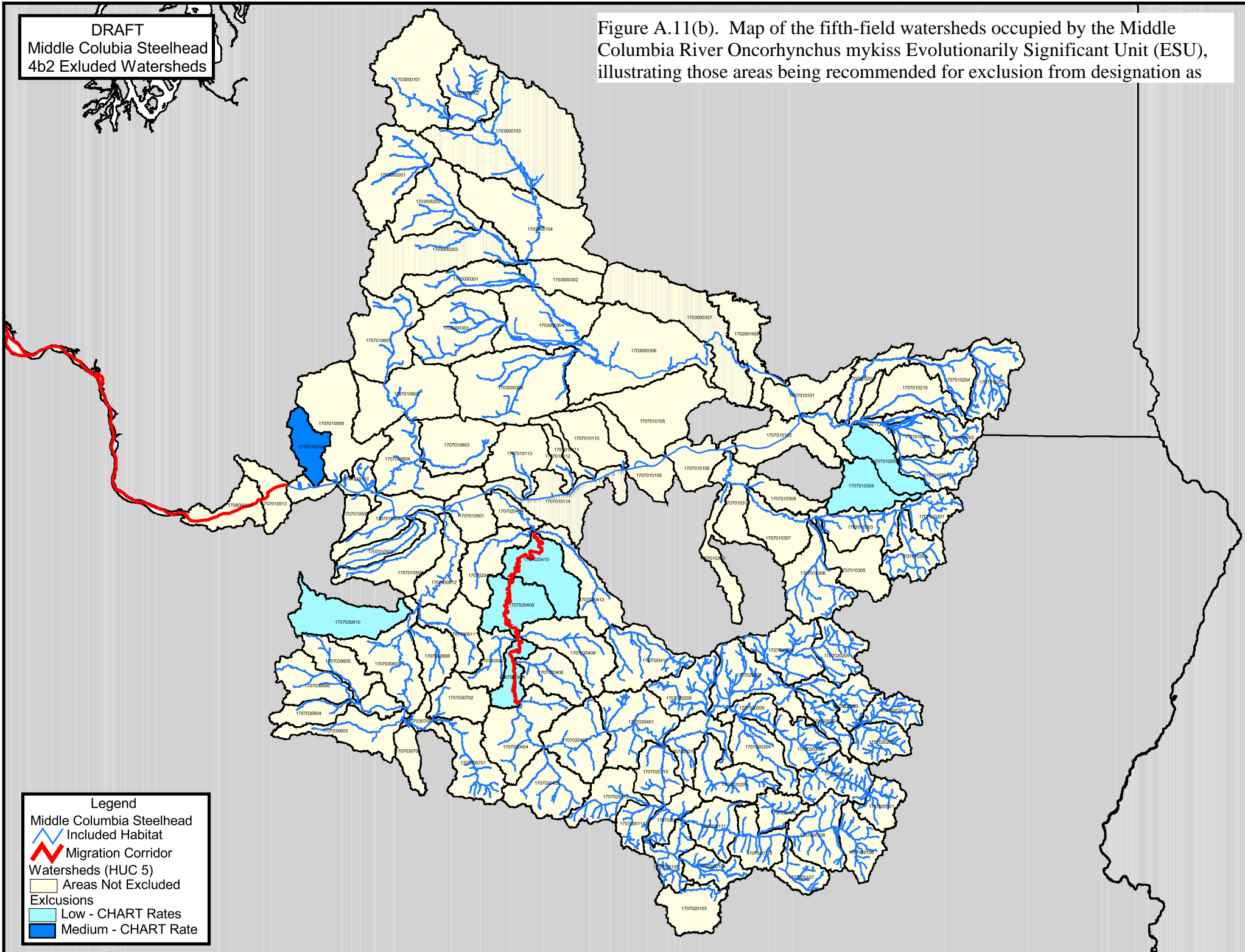
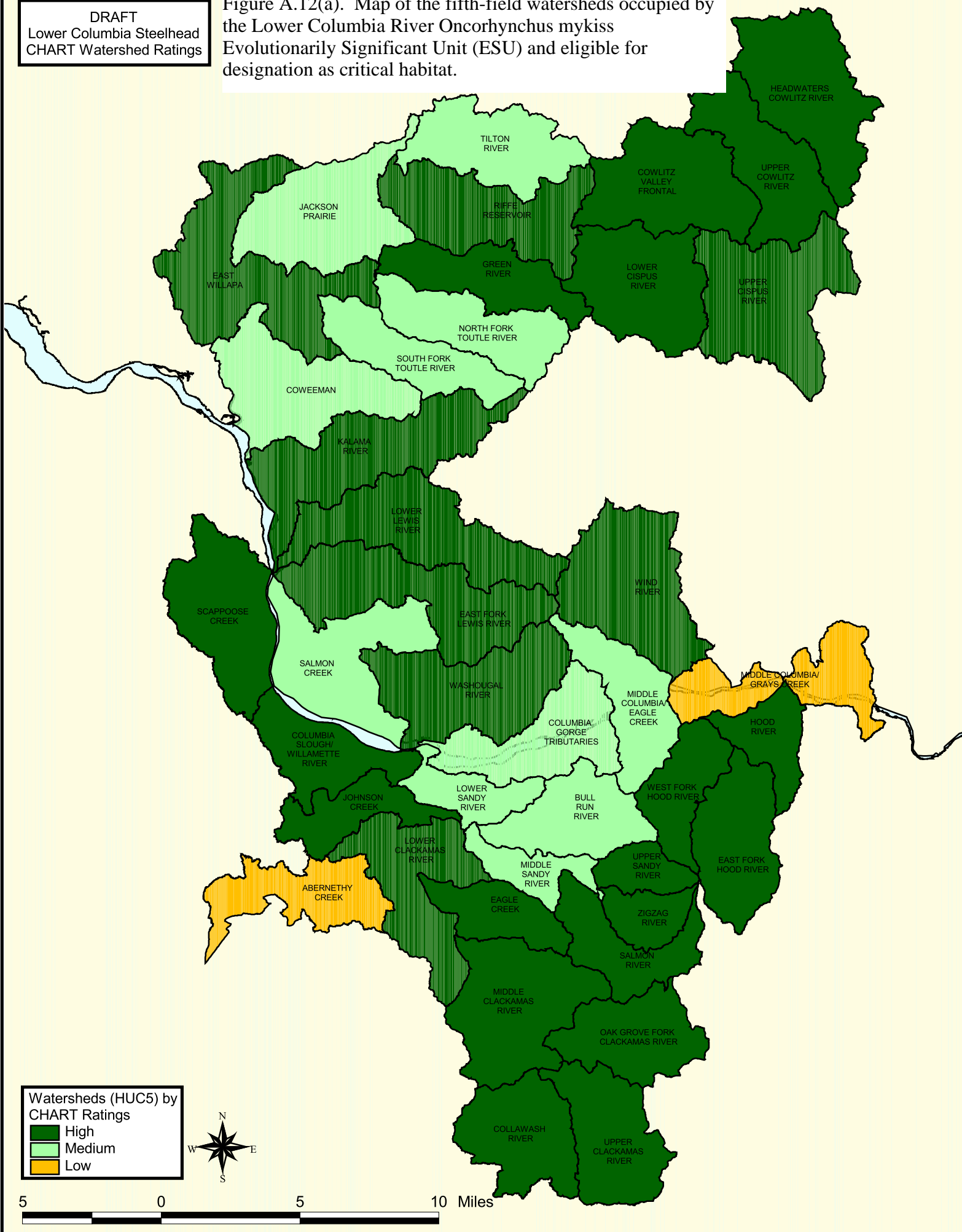
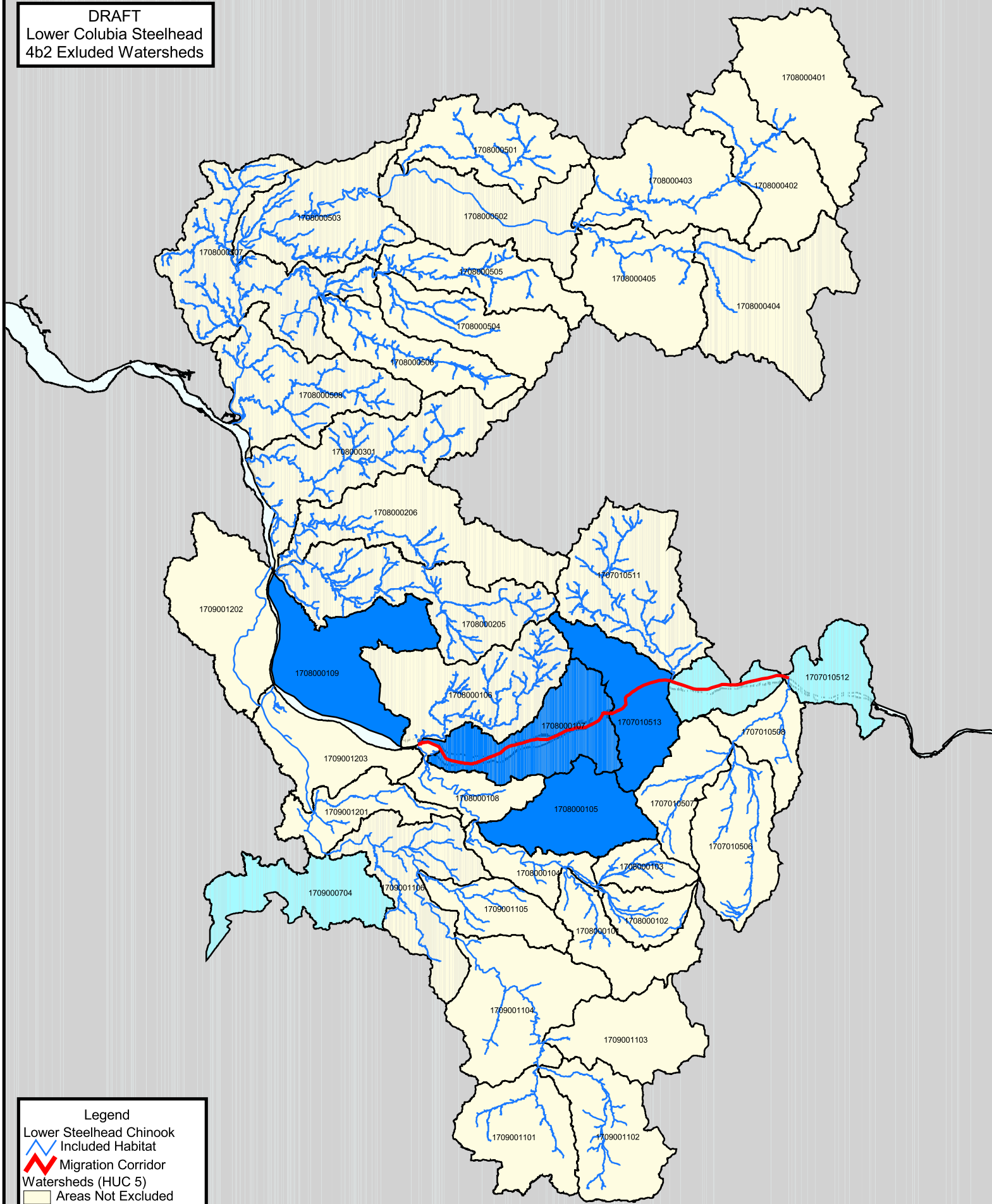


Figure A.12(a). Map of the fifth-field watersheds occupied by the Lower Columbia River *Oncorhynchus mykiss* Evolutionarily Significant Unit (ESU) and eligible for designation as critical habitat.



DRAFT
Lower Colubia Steelhead
4b2 Excluded Watersheds

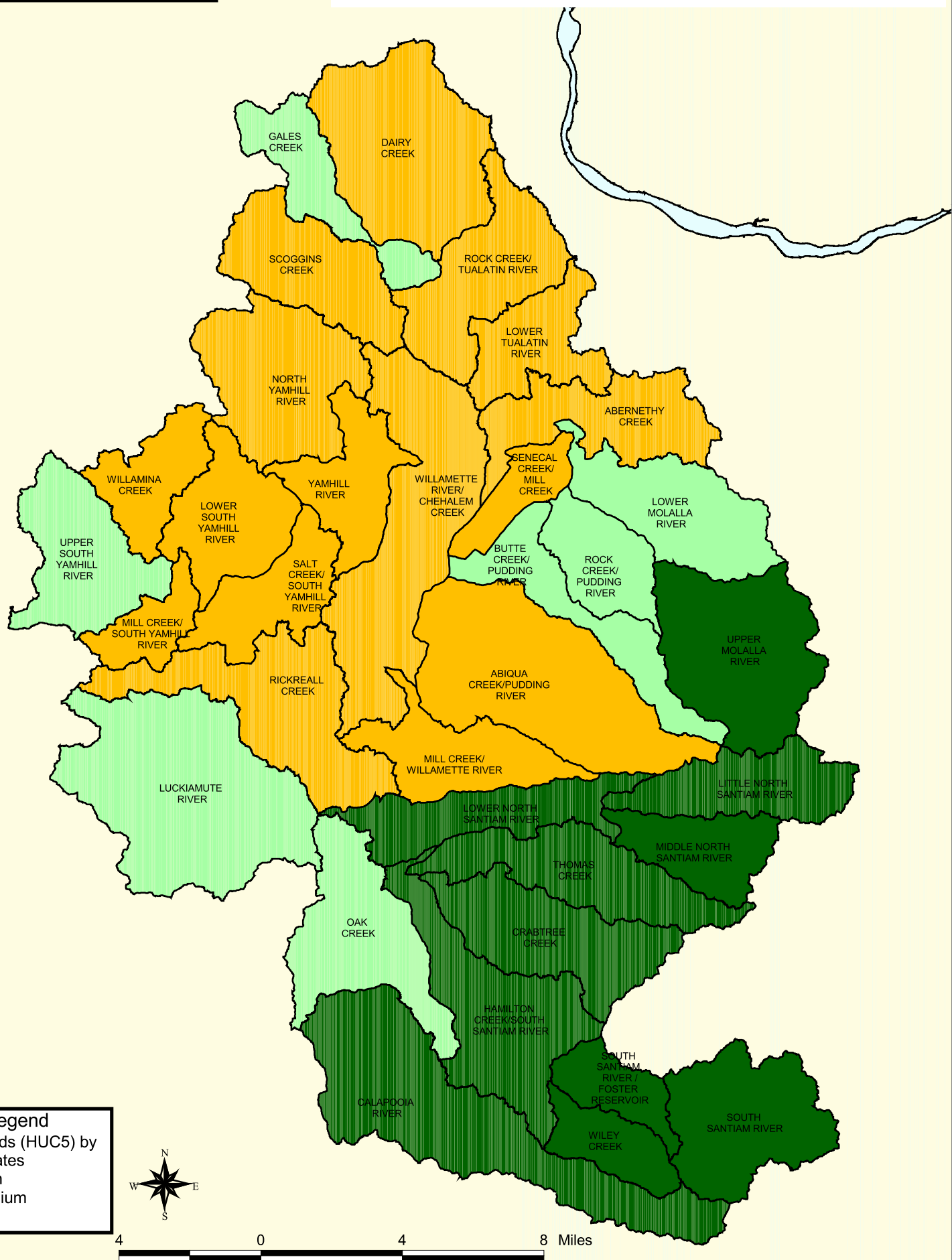


- Legend**
- Lower Steelhead Chinook
 - Included Habitat
 - Migration Corridor
 - Watersheds (HUC 5)
 - Areas Not Excluded
 - Exclusions
 - Low - CHART Rate
 - Medium - CHART Rate

Figure A.12(b). Map of the fifth-field watersheds occupied by the Lower Columbia River *Oncorhynchus mykiss* Evolutionarily Significant Unit (ESU), illustrating those areas being recommended for exclusion from designation as critical habitat.

DRAFT
Upper Willamette Winter Steelhead
CHART Watershed Ratings

Figure A.13(a). Map of the fifth-field watersheds occupied by the Upper Willamette River *Oncorhynchus mykiss* Evolutionarily Significant Unit (ESU) and eligible for designation as critical habitat.



DRAFT
Upper Willamette Steelhead
4b2 Excluded Watersheds

Figure A.13(b). Map of the fifth-field watersheds occupied by the Upper Willamette River *Oncorhynchus mykiss* Evolutionarily Significant Unit (ESU), illustrating those areas being recommended for exclusion from designation as critical habitat.

